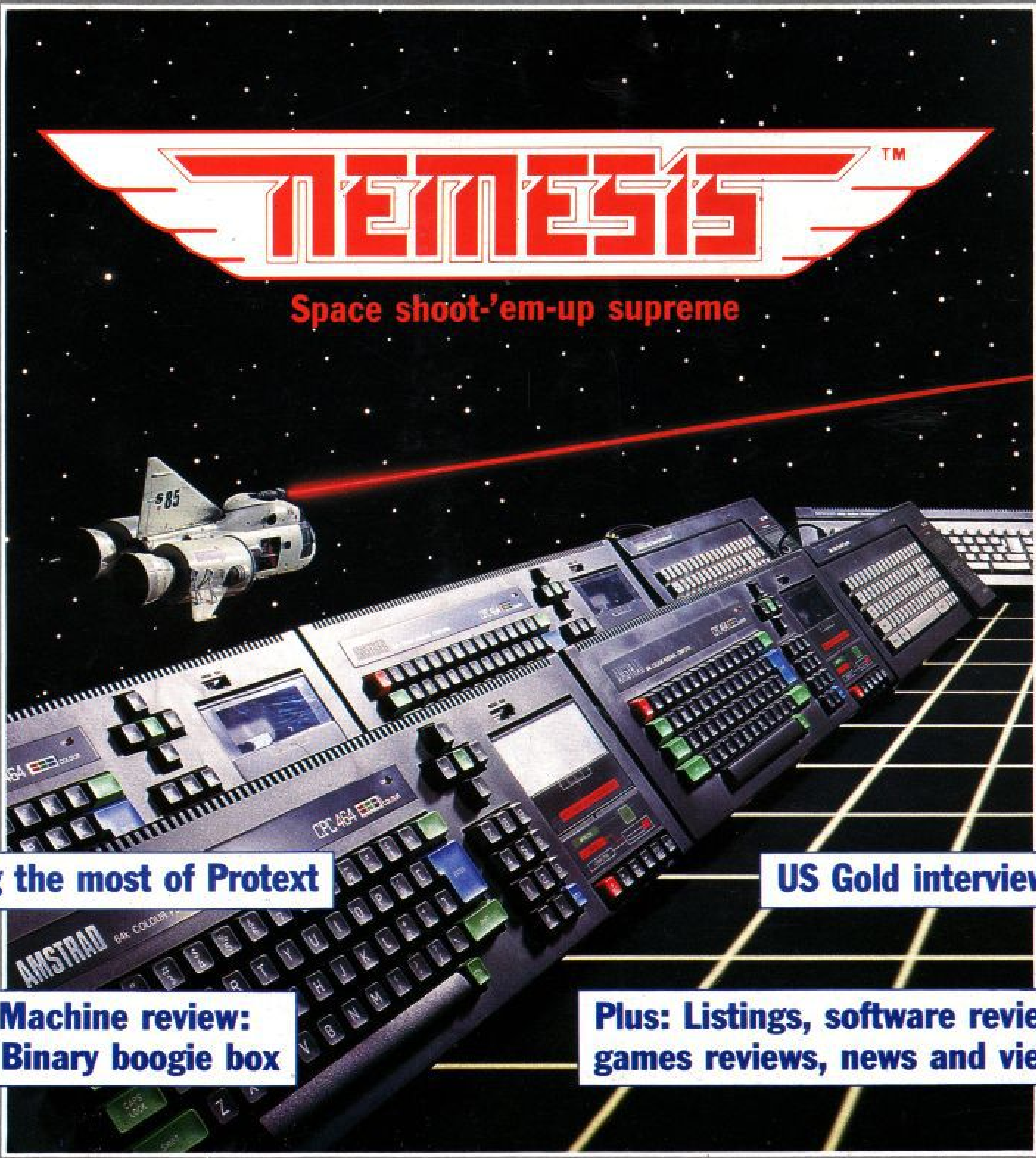
The Official Amstrad Magazine
March 1987 £1.00

AMSTRAD COMPUTER USER



Making the most of Protext

US Gold interviewed

Music Machine review: Ram's Binary boogie box

Plus: Listings, software reviews, games reviews, news and views

Norway NOK 30.00, Spain 300 Ptas, Turkey 1650 TL, Denmark Kr. 31.00, New Zealand NZ$4.95 Rec

MASTERFILE III

FOR THE AMSTRAD CPC 6128 (ALSO CPC 464/664 WITH DK 'TRONICS 64K RAM)

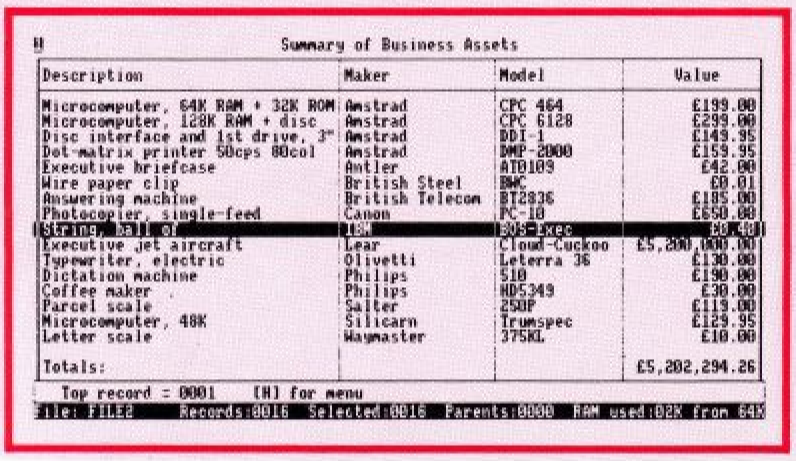
FIRMLY ESTABLISHED ...

MASTERFILE III is now firmly established as THE filing system for the CPC6128. It has received rapturous reviews and we could paper the walls of our new offices with our customers' letters of appreciation.

For the benefit of newcomers to the CPC machines: MASTERFILE III is a powerful and flexible data filing and retrieval system. All "database" systems require that your data is organised into fields and records. Unlike most, MASTERFILE does not commit you to field lengths or formats, since ALL data is variable-length and optional. Files are not pre-formatted, and only used bytes are saved to disc. Also, unlike the rest, MASTERFILE allows multiple user-defined ways of viewing/printing your data. And unique in its price range, MASTERFILE offers RELATIONAL FILE options, whereby common data can be entered just once and shared by many records. Maximum field size is 240, maximum fields per record is over 50, and maximum file size is 64K. Room for 1,000 full names and addresses, for example. Only one disc drive is required. It is menu-driven throughout, and comes with detailed illustrated manual, and example files.

SO VERY VERSATILE ...

Just about ANY kind of information can be handled by MASTERFILE. You can EXPORT the data to other systems (e.g. PROTEXT/MERGE and TASWORD). You can even merge your own USER BASIC to MASTERFILE for customised file processing, or build new files from other computer sources. The speed of SEARCH of MASTERFILE is second to none. Records can be sorted ascending/descending, character or signed numeric, even embedded keys such as surnames. Other functions are field-to-field calculations, and several-across label printing. We simply don't have room to list all the features; give us a call if you are still in doubt of the power of MASTERFILE III.



Summary of Business Assets

Description	Maker	Model	Value
Microcomputer, 64K RAM + 32K ROM	Amstrad	CPC 464	£199.00
Microcomputer, 128K RAM + disc	Amstrad	CPC 6128	£299.00
Disc interface and 1st drive, 3"	Amstrad	DDI-1	£149.95
Dot-matrix printer 50cps 80col	Amstrad	DMP-2000	£159.95
Executive briefcase	Antler	AT0109	£42.00
Wire paper clip	British Steel	BWC	£0.01
Answering machine	British Telecom	BT2836	£185.00
Photocopier, single-feed	Canon	PC-10	£650.00
String, ball of	IBM	DOS-Exec	£0.40
Executive jet aircraft	Lear	Cloud-Cuckoo	£5,200,000.00
Typewriter, electric	Olivetti	Leterra 36	£130.00
Dictation machine	Philips	510	£190.00
Coffee maker	Philips	HD5349	£30.00
Parcel scale	Salter	250F	£119.00
Microcomputer, 48K	Silicarn	Trumspec	£129.95
Letter scale	Waymaster	375KL	£10.00
Totals:			£5,202,294.26

Top record = 0001 [H] for menu

File: FILE2 Records:0016 Selected:0016 Parents:0000 RAM used:02K from 64K

ALL THIS POWER ...

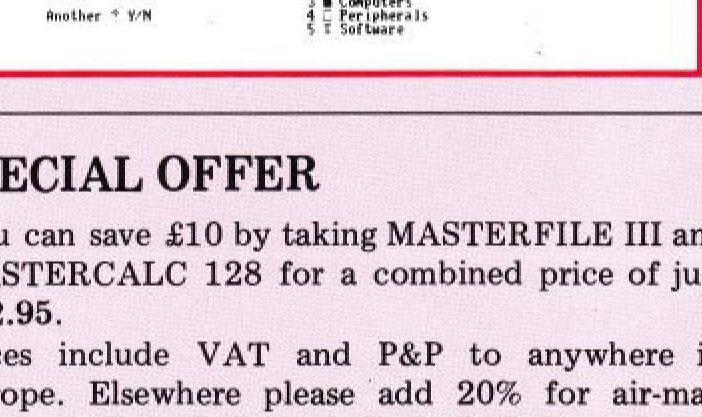
This is no toy thrown together in BASIC and half-tested, but real machine-coded computing power professionally constructed. We have had IBM and Apricot users beg us for a MASTERFILE for their machines — when they had seen the earlier CPC MASTERFILE. All this power is yours for ... **£39.95**.

For those who already have an earlier MASTERFILE, we offer updates; please telephone for details. You will be amazed at the performance improvements and extra functions.

★★★ PCW users: be patient, MASTERFILE 8000 will be ready early in 1987 ★★★

MASTERCALC 128 SPREADSHEET

We also have one of the fastest and friendliest spread-sheet programs around, MASTERCALC 128. Its unique features include: individual tailoring of column widths and precision; relocatable formulae; split-screen option; automatic cursor advance; text output to printer, or to disc for interface with PROTEXT or TASWORD; hi-res graphic histogram of any three rows. MASTERCALC 128 runs on CPC6128, or CPC464/664 with DK'tronics RAM. The price is just **£33.00**.



SPECIAL OFFER

You can save £10 by taking MASTERFILE III and MASTERCALC 128 for a combined price of just **£62.95**.

Prices include VAT and P&P to anywhere in Europe. Elsewhere please add 20% for air-mail service. ACCESS/VISA/MASTERCARD welcome, written or telephoned, quoting card expiry date. Make cheques payable to "Campbell Systems". Our normal response is return of post, 1st class.

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AMSTRAD COMPUTER USER

The official magazine for all users of Amstrad computers

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AMSTRAD PROFESSIONALS FROM DIGITAL RESEARCH

*And high level languages, so ask about PASCAL/MT+ and CBASIC Compiler packages £49.95 each

Your Amstrad can handle interactive presentation quality graphics. So here they are.

The Amstrad 8256 and 6128 don't simply have massive memory capacities that take them across the dividing line between home and business machines. They also have GSX graphics extension systems that make them potential producers of high quality (and highly exciting) graphics for business, educational, scientific, industrial or pure pleasure purposes.

Now Digital Research, creators of the CP/M operating systems that make this graphics capability possible, offer you two professional graphics software packages which exploit it to the full: DR GRAPH and DR DRAW.

Data comes alive with DR GRAPH £49.95.

DR GRAPH lets you use data entered manually or created with popular spreadsheet programs such as SuperCalc to design vividly effective and professional line, bar, scatter and stick graphs, and pie and text-only charts, quickly and effortlessly.

Simply choose options from menus and by filling in a form.

When you've completed your selections, you've completed the graph.

Choose from three different type styles (plus your machine type) for titles, legend and annotation copy. Deploy different line styles, line and bar widths and eight filled patterns to add clarity and emphasis. Add borders, colours and labels. Bar charts can be stacked, clustered, or arranged in steps or "sticks." Pie charts can include exploded "slices."

Annotation can be incorporated, modified, and moved anywhere you want. Different graph types can be combined within one chart, and as many as four different charts or graphs can be combined on a single page.

Ideas become art with DR DRAW £49.95.

DR DRAW lets you create organization charts. Flowcharts. Business logos. Technical diagrams. Maps. Or just about any shape or line drawing imaginable.

And each element can be enhanced or highlighted with a variety of colours and patterns.

Easy-to-follow menus let you select pre-programmed shapes – circles, bars, arcs, rectangles, polygons, and lines – or create your own pictures by modifying these shapes via mouse or keyboard. Add text anywhere you wish, selecting between a wide variety of type font styles.

Revise with the stroke of a key. Fill a shape with colour or patterns.

Enlarge or reduce it. Move it to a new location, or copy it.

Change type fonts, size, colour, and location with just a few simple keystrokes.

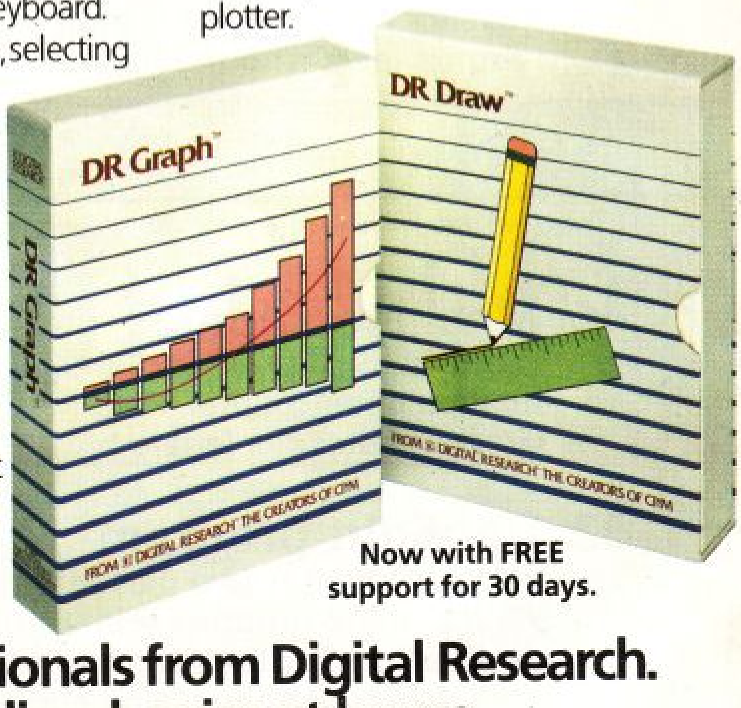
Zoom in for detailed work, then zoom back out to view the entire picture. Or zoom out to fit your picture neatly in a 8½"x 11" or 11"x 8½" page layout. On extra-large drawings, you can pan the screen back and forth over each section.

See, store, print, present!

DR GRAPH and DR DRAW let you see exactly what you've designed on screen. Then store it on disk for recall or update later. Or print or plot on paper or overhead transparency film.

Either way, you've got a totally professional presentation.

Both packages run on Amstrad CPC 6128 or PCW 8256 computers with one or two disk drives. Hard copy can be produced on any GSX-driveable printer or plotter, such as Amstrad, Epson or Shinwa printers and the HP 7470A plotter.



Now with FREE support for 30 days.

Amstrad Professionals from Digital Research. Now Professionalism begins at home.

To place an order, send cheque to: Amstrad Sales, Digital Reasearch (UK) Limited, Oxford House, Oxford Street, Newbury, Berkshire RG13 1JB. Or telephone Newbury (0635) 38787 or 38783, with your credit card details. Or contact your local Amstrad dealer.

*FREE telephone support for 30 days following receipt of registration card. Thereafter a full year's on-line telephone support is available for just £15.00 + VAT. Full details will come with your software.

*Prices include Packaging, Postage and VAT.

DIGITAL RESEARCH

The creators of CP/M

Amstrad PC launched in USA

Amstrad has taken on IBM at home with the launch of the PC 1512 in the US. The unveiling took place at The Consumer Electronics Show in Las Vegas early this year.

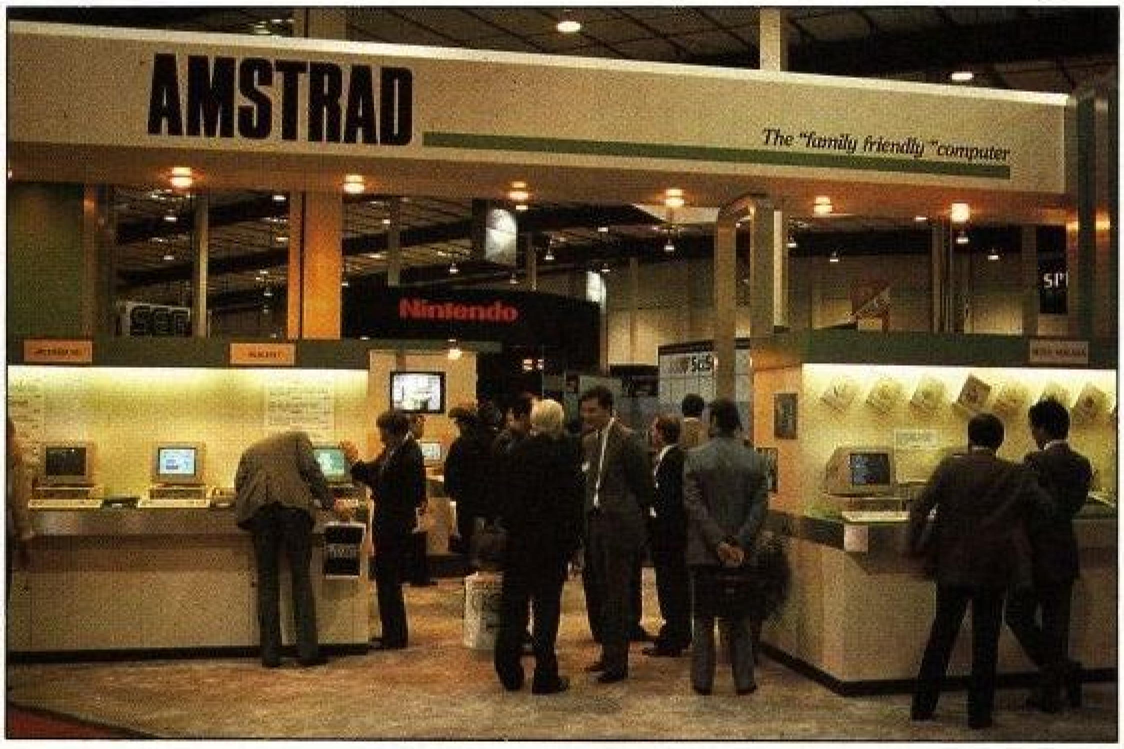
The price of PC's is somewhat lower in America with many companies touting cheap clones. These are often sold in kit form and require some knowledge of electronics before assembly. And the specification is pretty primitive when compared to the PC 1512.

However, the sub $800 price tag over there does not sound as impressive as sub £500 does here, so the emphasis was on the complete system approach using the slogan "The 'family friendly' computer".

Visitors were invited to the stand (or booth to use the Stateside phrase) by eight "English bobbies" – Keystone cop-type characters with white gloves and whistles.

The full range of Amstrad PC's is available throughout the States, a distribution task taken on by the Texas based company Vidco.

Amstrad does have an office in the US but will stay very much in the background, allowing Vidco to handle sales and marketing.





Amstrad takes on Big Blue on its home ground helped by the boys in blue – fake British bobbies



In pursuit of Trivia

With £10,000 at stake the man from *ACU* took part in the Domark Trivial Pursuit competition, fighting bravely for a wedge of the action.

Unfortunately Simon Jordan didn't win, but as the youngest entrant he was awarded a parrot by Dave Carlos (the one with the beard) and Johnny Ball (the one without the numbers). Our thanks to all who took part.

Britannia give it some stick

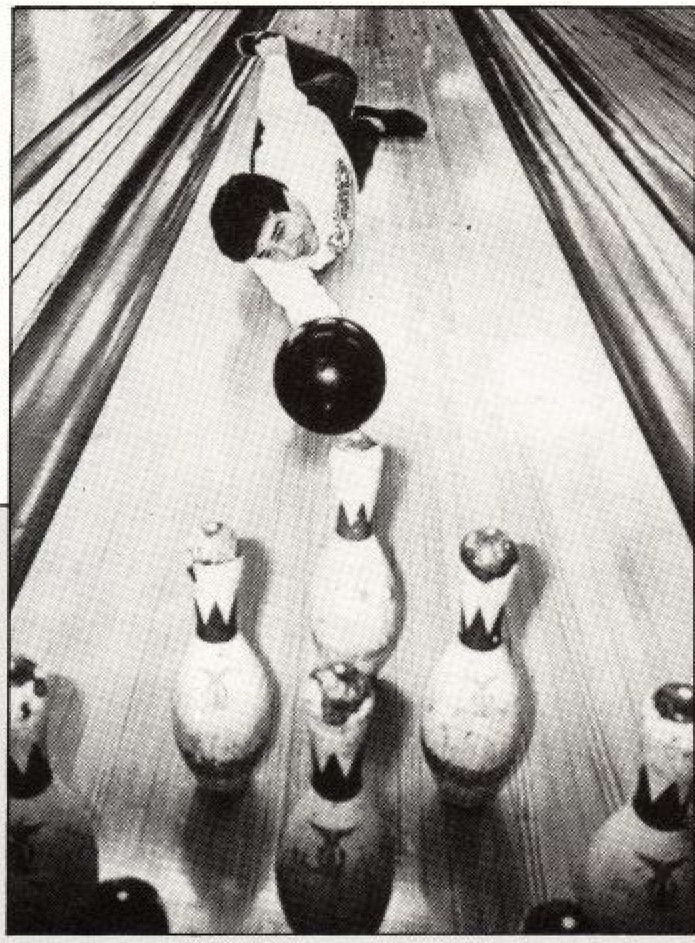


This joystick may not look much but it happens to be a Phasor One from Britannia.

Made in Wales (land of song and Konix joysticks) the Phasor One (beam me up Scotty) may look like a gun from Star Trek, but it turns out to be a very good buy – check it out at your local shop.

The microswitch mechanisim means fast response and the large handle is comfortable to hold. Tested with even an unusually small hand the Phasor felt comfortable and the large trigger allows a fast rate of fire.

After extensive tests in the ACU office some doubts over long term durability arose but 10 out of 10 games testers who expressed a preference preferred it.



Reaktor eatware



Software houses often look for the recipe for success; Reaktor – one of the Ariolasoft labels – has found a recipe for cup cakes. Well, when the instructions for a new release consist of which three keys to use in conjunction with the joystick you need something else with which to fill up the inlay card.

Reaktor even includes the adjustments necessary for cooking their K-Ring cupcakes up a mountain. But despite the edible gimmicks the game sounds good, a fast shoot-em-up called Killer Ring which looks like a jolly good blast.

Designed by Byte Engineers and programmed by Ross Goodly it should be in the shops soon.

Tisdall framed

Sport simulations usually cover popular games, things you see on telly like snooker, darts and football. The last time I saw bowling on the box Fred Flintstone lost to Barney Rubble.

Still, the real thing is fun. Choosing a ball light enough to throw with some accuracy but heavy enough to knock the skittles over is one of the things you'll have to master with this new game from US Gold.

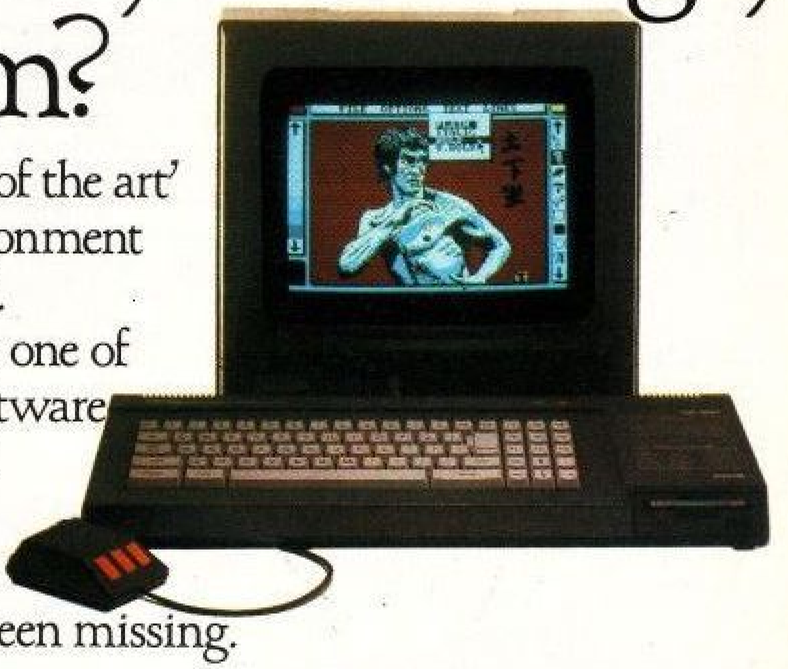
The game features a true perspective view of the lane, team and individual players, automatic scoring – which is just as well since bowling scores are a mystery to me – and something called power and hook control.

Originated by Access in the US the Amstrad version is supposedly out soon. To prove that he knows less about bowling than he does about software US Gold sent us this piccy of their man Richard Tidsall forgetting to let go of the ball.

DAVE and PAM by ALEX & SPITAL



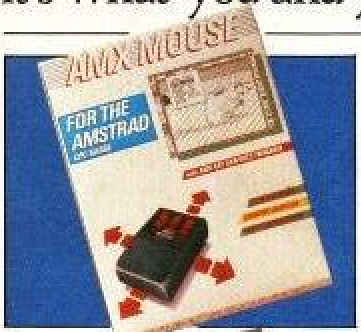
What's so special about the Mac, the Atari St, the Amiga, Windows and Gem?

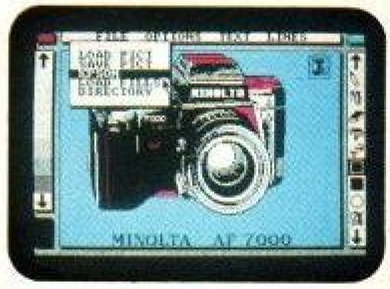


It's no surprise that nearly all new 16 bit 'state of the art' micros now come with a Mouse and Wimp environment (Windows, Icons, Menus and Pointers) as standard.

With the AMSTRAD CPC you already own one of the classic micros and by simply adding AMX software you can achieve the same ease of use, freedom and versatility of much more sophisticated computers.

The AMX Mouse and compatible software – it's what you and your AMSTRAD micro have been missing.

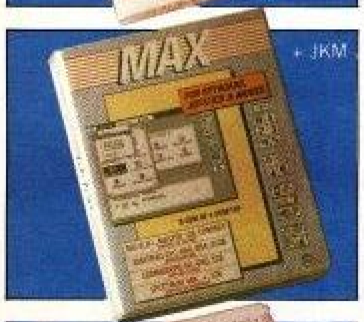




ART AND MOUSE OPERATING SYSTEM

AMX MOUSE PACKAGE Tape and 3" Disc — £69.95

There's not much joy in a joystick and keyboards can be all fingers and thumbs. Acclaimed by the press as 'the best input device', already over 50,000 micro users have adopted an AMX Mouse. The Mouse comes with fantastic Art Software and AMX control which enables you to create a Mouse environment in your own programs. Available for Amstrad CPC 464, 664, 6128.



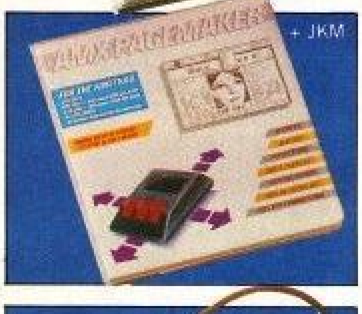


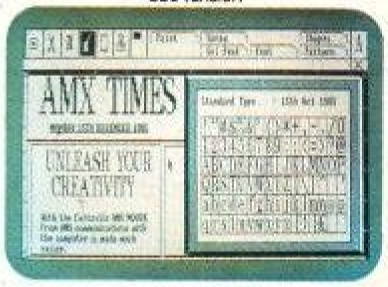
BBC VERSION

GRAPHIC DFS FRONT END

MAX 3" Disc — £19.95

MAX provides an easy to use graphic based front end to your computer's disc filing system including a comprehensive set of disc management operations such as cataloging, copying, deleting and re-naming, also included are disc utilities such as sector editing, recovering erased files, formatting, verifying and faster tracking. You can also run programs from within MAX. Available for Amstrad CPC, 464, 664, 6128.





DESKTOP PUBLISHING

AMX PAGEMAKER 3" Disc — £49.95

Produce professional documents and newspapers with text and graphics, supplied with 16 variable typefaces it has many graphic functions including cut, copy, paste, etc. Available Now.

EXTRA! EXTRA! 3" Disc — £24.95

300K fantastic clip art, over 25 fonts.
Available February 1987. For use with the Amstrad CPC 6128, CPC 664 (+ 64K min add on Ram), CPC 464 (+ 64K min add on Ram + Disc Drive)





AMX MAGAZINE MAKER 3" Disc — £129.95

A combination of AMX Pagemaker and the Rombo Vidi-Video digitiser. Using any video and the digitiser, images from a camera or TV can be converted into a graphics screen with Pagemaker to illustrate magazines or newsletters.

There is also a growing list of AMX support software including: AMX 3D Zicon (3" Disc) **£24.95** with Zicon you can transform vector data into on screen graphics. Printers and plotters are fully supported, AMX Utilities (3" Disc) **£19.95.** Utility software for the original art program supplied with the AMX Mouse. A Mouse and interface (only) can be purchased for **£34.95** direct from AMS using the order form enclosed in MAX, AMX Pagemaker and AMX 3D Zicon. These superb products are available from all good computer dealers or direct by cheque, Access or Visa. All prices include VAT and post and packaging.

FOR INSTANT ACCESS/VISA ORDERS TELEPHONE (0925) 413501/2/3

AMX SOFTWARE

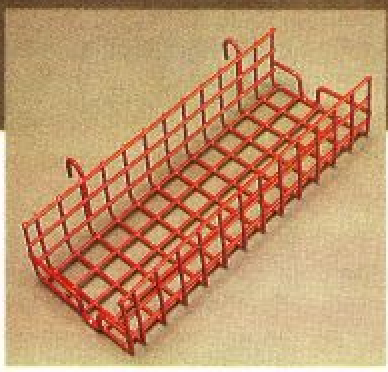
+ JKM
ALL THESE PROGRAMS WORK WITH JOYSTICK KEYBOARD OR MOUSE.

IMAGINATION AT YOUR FINGERTIPS.

ADVANCED MEMORY SYSTEMS LTD. 166/170 WILDERSPOOL CAUSEWAY, WARRINGTON, WA4 6QA. TELEX 628672 AMSG. FAX 0925 58039.

TUBELINK ON PRESTEL PAGE 2582182 SUPPORTS THE AMX MOUSE AND ALL AMS SOFTWARE.





FREE with every workstation ordered this Plug/Tidy basket will accommodate a 4 socket in-line distribution block.

The Klick colourframe workstation is designed to provide a highly efficient way of organising your micro system. This fully mobile unit runs on silent glide rubber tyred wheels and is ideal for use in the domestic or office environment.

Manufactured from heavy duty steel, the framework is finished in a choice of 5 stylish colours and the high quality melamine faced chipboard shelves are available in either White or Teak effect.

This unit will accommodate your monitor, computer, printer, disk drive or cassette recorder and is suitable for use with most leading micro systems including Amstrad, BBC Acorn, Commodore and Sinclair.

This offer is available to UK Mainland residents only.

Buttercup Yellow

Leaf Green

Marine Blue

Mahogany Brown

Overall assembled dimensions are: 845mm (33¼") high, 810mm (31⅞") wide and 610mm (24") deep.

To Store Stock Systems Ltd, FREEPOST Manchester M23 9BH

Please send me _____ (quantity) of units at £79.50 inc. VAT & carriage

I enclose a cheque for £_______________ made payable to Store Stock Systems Ltd or debit my ACCESS/VISA

Card No. | | | | | | | | | | | | | | | | |

Card expiry date_______________ Signature_______________

Name_______________________________

Address_____________________________

_______________________ Postcode_______________

(BLOCK LETTERS PLEASE)

Please write the number of units required in the boxes provided

Frame colour	Shelf colour White	Shelf colour Teak
Poppy Red		
Buttercup Yellow		
Leaf Green		
Marine Blue		
Mahogany Brown		

ACU 3/87

Klick

ADDING COLOUR TO COMPUTER FURNITURE

Access VISA

(Please allow 28 days for delivery)



Hi, I'm Lance Davis your letters editor. If there is anything you think Amstrad computer users ought to know about then drop me a line. Either use snail mail (normal post) or Telecom Gold, system 72:MAG012.

Don't expect a reply. Do expect your letter to be shortened to fit the space available.

Please specify what computer you have and if you've a 464 let me know if you've got a disc drive.

Some writers may be sent a free bit of software – but don't expect that either.

Costs a packet?

With reference to the January article by Steve Gold on the virtues of cheap phone calls using PSS, I would suggest that Steve takes a close look at the MicroLink adverts.

Their advertised costs are 25p a minute for PSS calls, over and above the connect charge of 11p a minute during office hours.

Perhaps you may care to comment on the large discrepancy between these advertised costs and Steve's comment that "In practice the cost of a datacall between any two sites in the UK is around 2 pence a minute".

Robert Lumsden,
West Lothian.

LD: *Software has bugs, advertisements have literals. The price in the Microlink advertisement was wrong, it should be 2.5p. It has now been corrected.*

Getting started

A couple of friends and I plan to start a new user group (original idea?). We're looking for people who live in the Southampton area and own either Amstrad, Acorn, Atari or Commodore micros – it doesn't matter which models.

Would-be members should be at least 16 years old. If they require an application form could they write to me at 14 Hobart Drive, Hythe, Southampton, Hants SO4 6FH, sending an SAE with details of the make and model of their computer.

Could you tell me why my 464 coughs-up an error when I use the variable DEC$? It may be a reserved word, if so how is it used?

If anybody wants to save a file at high speed then there's no need to resort to RSXs. Just POKE &B8D2,30 will do it.

Although it's fast I can't guarantee that a file saved on one machine will work on another.

Iain Campbell.

LD: *When Amstrad launched the CPC 464 things were a bit rushed. Locomotive Software had to produce a Basic for the machine within a limited time and to fit into the small space allocated for the rom.*

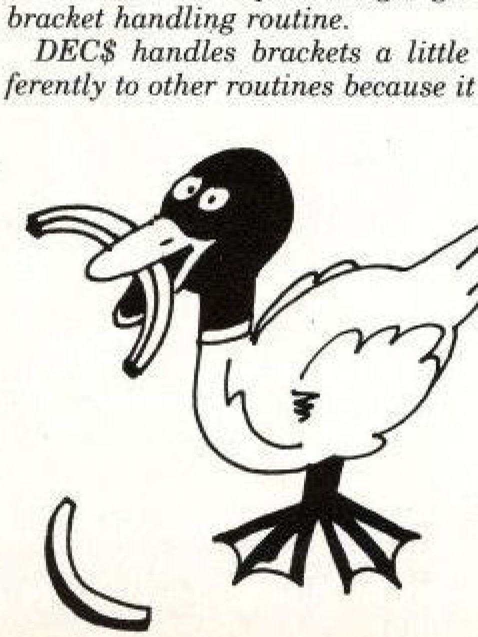
Locomotive started with Mallard Basic, added some features and made it more space-efficient. Part of this customisation involved producing a general bracket handling routine.

DEC$ handles brackets a little differently to other routines because it has two parameters. The format as any 664 or 6128 owner will tell you is: DEC$ (variable, string). Where the string is similar to the format used by PRINT USING. The command produces a formatted version of the STR$ command.

Due to a bug hinted at with the brackets 464 owners have to type something like a$=DEC$((a,'###') – with two open and one closed bracket to get the command to work.

Because of this bug the command was left out of the 464 manual and officially doesn't exist. Note that programs written like this will not work on a 664 or 6128 where the bug has been fixed.

Thanks for the tape Poke, I'm not sure I'd trust it for valuable data.



The discussion continues . . .

Being essentially lazy I hadn't intended to join in the discussion on the whereabouts of the missing disc cases. But fury at the purchase of yet another pair of programs without disc cases but with oversized and in one case extremely flimsy boxes impels me to join in.

Besides after having had only a few


KONAMI'S COIN-OP HITS
FIVE GREAT ARCADE GAMES FOR THE PRICE OF ONE
Voted..."BEST COMPILATION OF THE YEAR"
HYPER SPORTS
Konami
GREEN BERET
Konami
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Konami
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DISK
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Imagine
..the name of the game
Screen shots taken from various computer formats
Imagine Software (1984) Limited, 6 Central Street, Manchester M2 5NS. Telephone: 061-834 3939 Telex: 669977.



comments equating the problem to Fibonacci and his rabbits and disappering coathangers without any real answer being forthcoming (or even Pascalcoming) it would seem that I must now reveal all.

It's quite simple really. They're all at Melbourne House. It seems that Hobbits have a passion for strawberries — naturally they grow the miniature variety.

And if you look at their construction and shape, disc cases make ideal cloches for their gardening. So Frodo and his mates have bagged the lot. Why, even his name, Baggins, gives him away.

On a more serious note *(what, you weren't serious? – LD)* I would point out that audio cassettes and compact discs suffer similar problems of missing or damaged cases, but replacements can be readily purchased.

There is also the point that we are constantly urged to protect our discs from dust and dirt, yet we receive discs cheek by jowl with freshly cut instruction manuals which shed highly abrasive paper dust all over them.

Which brings up another complaint, ill written instruction manuals. Both programs purchased have been reviewed in your magazine. Both seem worthy of the reviewers enthusiastic comments but his comments on the Leisure Genius assembler are simply not tough enough.

I feel that I am learning to use the program in spite of and not with the help of the manual. On the other hand the manual with The Advanced Music System is worthy of special praise. Clear, orderly and comprehensible.

The Leisure Genius publishers apologise for their use of blue paper, done they say to prevent photocopying. I have seen many similar attempts to prevent photocopying, including curiosities like purple ink on yellow paper.

Let me assure Ocean software and others who plan similar exercises that if you can read it you can photocopy it. Black ink on black paper presents some difficulty but is not impossible, but black ink on blue paper photocopies like a dream.

If they took external advice on this and it cost them anything they should demand a refund. All it does is give a new challenge to the sportive hacker.

G.Matthewman,
Leeds.

LD: *As you will see later in this month's letters, we've found the holy grail in a shop which sells disc cases.*

The reason software houses give for big boxes is that they need the space for a manual. This is true but it's not the whole truth. The bigger the box the more likely you are to see it on the shelf. If you can't see it you might not buy it.

A big box also makes you feel better. When you shell out the best part of £15 for a Rainbird game you feel you are getting better value because it's in a bigger box.

I agree with the Ed (that's a first – Ed) *in his sentiments that disc cases are a waste of time, the metal shutter more*



than protects the disc. There was a move to produce a cheap shutterless disc, fortunately this has not happened.

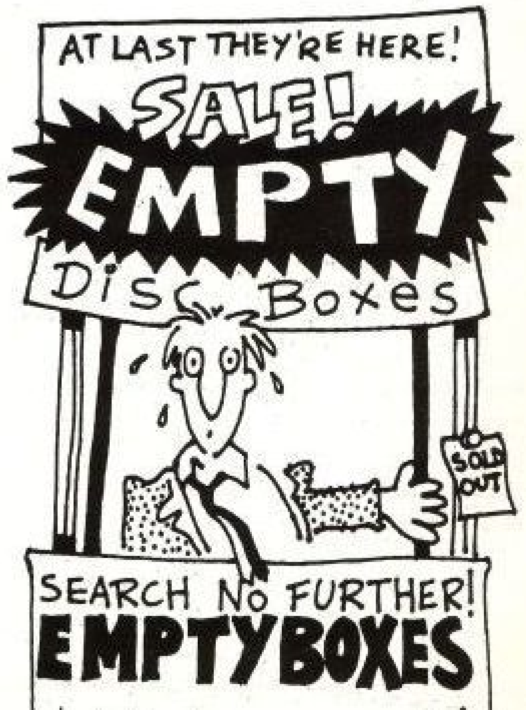
Being a yuppie I too have a CD player and broken boxes, but have been unable to find anyone selling empty cases –well, I saw them on sale at Tower Records in San Fransisco (name dropper – Ed), *but that's not exactly on my way to work and I would like to house Dire Straits properly.*

Disc cases

It gives me great pleasure to inform you and your readers that I have solved the problem of the missing disc cases.

These can be obtained at the Multi Coloured Micro Shop, 8 Dundas Street, Redcar, Cleveland at 25p each.

L.W. Bird,
Saltburn,
Cleveland.



ACU



HAIRY HACKERS HAUNT



The combined forces of ZZKJ and Vax bring you the largest Hackers Haunt ever. Get ready for some serious typing.

As the first snow of winter settles in my hair and the crunching noises of broken indicator lights being ground underfoot pierce the frosty air, I think I can say with confidence that it is now damned cold.

How peeved I am therefore, to be receiving letters from our Australian friends containing tales of barbecues on the beach and pavements melting by solar power. By the icicles on my chinny-chin- chin, I am irate!

Fortunately that doesn't stop me from publishing the good news to Archangel Richard Hooper of Oz, and everybody else who wrote in requesting ZZKJ to perform his manipulative miracles upon the disc version of Elite. Not only has he made Witch Space a nicer place to be with a disc drive, but if your machine is one of the lucky types with oodles (well, 64k was a lot once) of ram, you can quit reloading bits of the game off disc all the time.

Elite 3 – The return of the disc drive

Firebird finally decided to put Arnold's Elite on to disc. So now you no longer have to wait half a dozen millenia for it to load. However, this does mean that the old hack programs won't work – but fear not Commander, for where there's a problem, there's always a poke.

Since Firebird chose to use practically no protection on the disc version, the hack program is even simpler than before. So without any further ado, here's the lowdown on the listings.

Listing I (see page 20): This is the new version of the character designer. It is used in exactly the same way as the original (I don't have the magazine to hand, so I can't type in the instructions in the same way), except that when first run it will ask you to place the Elite game disc into the disc drive and press a key.

This is so that it can load a part of the game, with which it encrypts the character files so that they will load straight into the game without any extra pokes being needed.

If the character designer ever returns to Basic when it fails to save the character on to disc, press Control and the small Enter key (the Enter key on the 6128) to abort the SAVE and continue. Now we can all have the energy unit with the copper coloured top; no other energy unit looks like it, or lasts like it.

Listing II: This is the line changes to the original tape-based Elite character designer for those of you who have upgraded your game. Just load in the old designer, type in the lines in Listing II, RENUM the program, and SAVE it back out. You will now have a character designer identical to that in Listing I. It's shown in the next column.

```
1 REM These are the changes from the Cas
  sette version to the disc version.
10 REM Disc based ELITE Character design
   er (C) ZZKJ 16/9/1986. Printed by ACU
   .
20 DEF FN p(x)=PEEK(dat+x):MEMORY &38CA:
   dat=&38CB:mcode=30000:wtk=&BB06
25 ct=&8F5F:KEY 140,"GOTO 1460"+CHR$(13)
   :IF PEEK(&8840)=58 THEN 30
26 MODE 1:LOCATE 1,13:PRINT"Put ELITE di
   sc in drive and press a key":CALL wtk
27 LOAD"LARGEAXX.BIN",&8840:POKE &8F64,&
   8A
620 IF k$<"0" THEN 580
1390 PRINT#1,"Insert disc, then press a
     key":CALL wtk:INK 0,9:INK 1,19:INK
     2,22
1410 sum=(sum+crc) AND 255:POKE dat+102,
     crc:POKE dat+103,sum:CALL ct
1415 WINDOW SWAP 0,2:SAVE LEFT$(n$,8),b,
     &38CB,&68
1420 CALL ct:CLS:WINDOW SWAP 0,2:INK 0,3
     :INK 1,25:INK 2,6:WINDOW SWAP 0,1:G
     OSUB 1470
1440 MODE 1:WINDOW 2,39,1,24:WINDOW #1,1
     ,40,25,25:WINDOW #2,5,37,13,16:ZONE
     19
```

Listing II

Listing III: This is the hack program for the game. To use it (after typing it in and SAVEing it off), LOAD it, delete

any lines containing any POKEs that you don't want, put the game disc into the disc drive, and then RUN the hack program. (RUN as in RUN, ↓ not ↑ RUN "name").

You have all of the POKEs that you originally had, except that you can't have infinite cargo capacity, because this is in a part of the game that keeps getting loaded off disc whenever you dock. (As before, I don't have the magazine to hand, so I can't type in the POKE descriptions exactly as before).

Remember to leave the game disc in the drive except when you are loading in a character, otherwise the game will crash.

That ought to fix the nasty bug in Elite which causes you to blow up when hit by too many enemy missiles. "Hitokire no cake", as they say in Japan (it means a piece of cake. This and many other things you didn't want to know).

Listing IV: This is the hack program for CPC6128s or 464/664s which have ram expansions. The total ram of the CPC MUST be 128k or more for this hack to work.

With it, not only can you have the infinite cargo capacity POKE, but you will now find that the game will no longer keep loading bits of itself off disc while you are playing. So once you have loaded the game you can put the game disc away.

This feature will be of use even to those honest souls who don't play hacked games, because if you remove all of the POKEs, the game will play normally except that it will all be stored in memory. The program is otherwise used in exactly the same way as the hack program in Listing III.

A couple of interesting points to note: The file MUSIQUEX can be loaded in at &6000 (OPENOUT"D":MEMORY &5FFF:CLOSEOUT:LOAD"MUSIQUEX ":CALL &6000), and plays The Blue Danube while you use Protext and so on.

In the game though, note that your Legal Status is no longer reset to Clean whenever you use the Escape Pod. Never mind, you can always use the character designer, or if you're really enthusiastic, Thargoid bashing in Witch space still does. And remember, in Witch space no one can hear you scream . . .

Sensible utilities

Now then, our busy friend ZZKJ has really been working away. Not only but also time. There are two more offerings from him in the mail (and all of them on disc, thank God). The first is a lister for RSXs, and a neat bit to call routines of the same name in different ROMs. Great if you haven't got Utopia, and slightly cheaper too.

The third monsterpiece is a printer spooler, the only drawback of which is that my printer makes so much noise that I can't concentrate on using my machine while its going anyway. In your own time ZZKJ.

A view from the bar

How often have you plugged in a background rom or loaded in an RSX and then had to dive for the manual because you couldn't quite remember one of the command names?

Or how often have you wondered why something won't work any more, only to discover that you have two RSXs clashing for names?

Well if you've had these problems half as often as I have, you'll find this program a real boon. Not only does it allow you to see exactly what you've got, but if you do have an RSX clashing with a rom it will allow you to call it directly from Basic, just as if you were using the Basic's CALL command.

To use the program just type it in and SAVE it. RUN the program, and if it says "Load Failed" and stops himem is too low and the RSXs can't be installed.

The program automatically relocates the machine code, so it can put it anywhere in memory – but it can't be put lower than 32768. If the program stops and says "Data error in line

```
10 ' DISC ELITE HACKING PROGRAM (C) ZZKJ
   16/9/86
20 MEMORY &1A3F:LOAD"COMMONXX",&1A40
30 MEMORY 42619:|TAPE.OUT:OPENOUT"D
40 MEMORY &83F:LOAD"LARGEAXX",&840
50 MODE 1:LOAD"COMMON2X",&C000:|DISC
60 POKE &35CB,0 : ' NO ENERGY LOSS
70 POKE &382D,0 : ' INFINITE MISSILES
80 POKE &8A8F,0 : ' MISSILES BLOW UP SPA
   CE STATIONS
90 POKE &896B,0 : ' SPACE STATIONS LAUNC
   H THARGOIDS
100 POKE &7AA8,0 : ' ONE HIT TO DESTROY
    SPACESHIPS
110 POKE &7A4F,0 : ' NO LASER TEMP RISE
120 POKE &4F02,0 : ' INFINITE FUEL
130 POKE &4C08,0 : POKE &4C12,0 : ' NO H
    YPERSPACE RANGE LIMIT
140 POKE &4BF4,0 : ' CONSTANT GALACTIC H
    YPERSPACE
150 POKE &3849,0 : ' CONSTANT ESCAPE POD
160 POKE &3866,0 : ' NO CARGO LOSS ON ES
    CAPE
170 POKE &2F6A,0 : ' CONSTANT ENERGY BOM
    B
180 POKE &2F7A,201 : ' NO ENERGY BOMB FL
    ASH
190 POKE &FE78,3 : POKE &FE86,24 : ' INF
    INITE CASH
200 POKE &48C3,0 : POKE &48CD,0 :POKE &
    8932,24 : ' E.C.M. JAMMER
210 POKE &4902,33 : POKE &4906,246 :POK
    E &4908,0 : ' CLOAKING DEVICE
220 POKE &1E63,195 : POKE &787C,0 :POKE
     &7B61,0 : ' INDESTRUCTABILITY
230 CALL &1C82
```

Listing III

```
10 ' DISC ELITE HACKING PROGRAM FOR 128+
   K CPC'S (C) ZZKJ 16/9/86
20 MEMORY &1A3F:FOR n=40000 TO 40009:REA
   D a:POKE n,a:NEXT
30 FOR n=0 TO 3:READ a$,l:ad=&4000+&2000
   *(n AND 1)
40 IF n=2 THEN POKE &6159,0 : ' THIS LIN
   E IS FOR INFINITE CARGO CAPICITY
50 POKE 40001,4+n\2:CALL 40000:POKE ad,l
   :LOAD a$,ad+1:NEXT
60 POKE 40001,0:CALL 40000:LOAD"COMMONXX
   ",&1A40
70 FOR n=0 TO 3:READ a:POKE a,0:POKE a+1
   ,176
80 POKE a+4,&20+&10*(n AND 1)+&80*(n\2):
   NEXT
90 MODE 1:LOAD"COMMON2X",&C000
100 ad=45014:t=0:FOR n=1 TO 141:READ a$:
    a=VAL("&"+a$):t=t+n*a:POKE ad+n,A:NE
    XT
110 IF t-1313892 THEN PRINT"DATA ERROR":
    STOP
120 POKE &35CB,0 : ' NO ENERGY LOSS
130 POKE &382D,0 : ' INFINITE MISSILES
140 POKE &8A8F,0 : ' MISSILES BLOW UP SP
    ACE STATIONS
150 POKE &896B,0 : ' SPACE STATIONS LAUN
    CH THARGOIDS
160 POKE &7AA8,0 : ' ONE HIT TO DESTROY
    SPACESHIPS
170 POKE &7A4F,0 : ' NO LASER TEMP RISE
180 POKE &4F02,0 : ' INFINITE FUEL
190 POKE &4C08,0 : POKE &4C12,0 : ' NO H
    YPERSPACE RANGE LIMIT
200 POKE &4BF4,0 : ' CONSTANT GALACTIC H
    YPERSPACE
210 POKE &3849,0 : ' CONSTANT ESCAPE POD
220 POKE &3866,0 : ' NO CARGO LOSS ON ES
    CAPE
230 ' INFINITE CARGO POKE IS ON LINE 40
240 POKE &2F6A,0 : ' CONSTANT ENERGY BOM
    B
250 POKE &2F7A,201 : ' NO ENERGY BOMB FL
    ASH
260 POKE &FE78,3 : POKE &FE86,24 : ' INF
    INITE CASH
270 POKE &48C3,0 : POKE &48CD,0 : POKE &
    8932,24 : ' E.C.M. JAMMER
280 POKE &4902,33 : POKE &4906,246 : POK
    E &4908,0 : ' CLOAKING DEVICE
290 POKE &1E63,195 : POKE &787C,0 : POKE
     &7B61,0 : ' INDESTRUCTABILITY
300 CALL ad+1,1267
310 DATA 62,0,246,192,1,0,127,237,121,20
    1
320 DATA "INDICATO",16,"LARGEAXX",18,"MU
    SIQUEX",16,"NOTMUSIC",16
330 DATA &8718,&873E,&8746,&8769
340 DATA A4,5A,5A,4B,4A,21,D7,AF,11,F6
350 DATA AF,06,6E,1A,CB,41,28,03,86,18
360 DATA 01,AE,12,13,10,F3,2C,0D,F2,DF
370 DATA AF,A8,EF,3F,2F,F7,BF,EF,AE,69
380 DATA 53,7E,08,FE,FB,3F,44,9D,4E,95
390 DATA 4E,FD,4E,4E,40,B4,FF,3F,10,70
400 DATA BD,A5,A8,93,3F,84,EF,6F,54,EF
410 DATA 2F,A4,EF,59,08,3F,74,B6,BA,70
420 DATA BD,5B,AD,EF,A8,93,3F,74,FA,E5
430 DATA 43,60,54,EF,6F,10,08,3F,C2,A8
440 DATA 93,3F,44,64,14,08,3F,BD,A5,A8
450 DATA 93,3F,84,EF,2F,54,EF,6F,A4,EF
460 DATA 59,08,3F,C2,A8,93,3F,08,C6,FB
470 DATA 3F,46,AC,A4,EF,F2,75,AF,08,FC,A
    C
```

Listing IV

SIREN SOFTWARE

"Without a doubt Siren Software have produced some of the best disc utilities ever seen on the Amstrad range of computers." Amtix! January 1987

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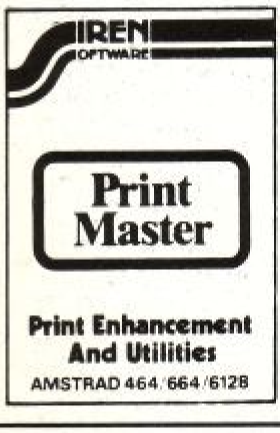
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XXX" there is an error in your typing in of DATA and XXX is the line of the Basic program containing the DATA error. Check the line indicated, and then re-run the program. If all the DATA is correct the program will install the RSXs, you will get the Ready message, and the program will end. The RSXs are now ready for use.

The program creates two RSXs. One is |SYSEX, (SYStem EXtensions), and the other FCALL (Far CALL). SYSEX can be used in three ways:

- |SYSEX will list out all RSXs and Background roms in the order that the system will check them. Following this is a list of all foreground roms.
- |SYSEX,n (where n is a number between 0 and 255) will list out all of the bar commands in rom number n, even if that rom is a background one that has not been initialised.
- |SYSEX,@a$ will individually list each and every bar command a$ will find DISC, DISC.IN, DISC.OUT, DRIVE, Basic, and so on. Each occurrence is shown as RSX addr:name (where addr is the address to CALL for the command; and name is its name), if the sub-string is found in an RSX name; or as TYPE rom,addr:name (where TYPE is the type of rom – FOREground, BACKground or EXTeNsion – rom is the rom's number, and addr is the address of the command) if the substring is found in a ROM.

If the length of a$ is zero it will act as if no parameters had been supplied, that is as the first example above.

The command works by redirecting the jumpblock entry for KL LOG EXT to point to a routine of my own which stores the entry value of the HL register pair. This value is a pointer to the 4 bytes of kernel workspace needed so that the RSX can be added into the bar command list.

This 4 bytes contains two pointers. One points to the command table for the RSX that it refers to, and the other points to the next 4 byte block in the bar command list.

When the RSX |SYSEX is executed it uses this pointer so that it can start at the top of the bar command list and can therefore search through all bar commands including other RSXs, instead of roms only.

The RSX |FCALL is used in exactly the same way as the CALL command in Basic, except that instead of CALL addr[,parameters], you use |FCALL, rom,addr[,parameters] instead.

"rom" is the rom number you want to call, and "addr" is the address you want to call. (Note that addr can be *any* address, even an address below 49152, that is in ram).

The parameters are exactly the same as the ones you would use if you were calling the rom routine normally by using a bar command, just as the parameters after a CALL are the same as that after the RSX name that you would otherwise be using. All it needs now is for some clever beggar to make a ROM routine called |FCALL . . .

```
10 ' sysex+fcall RSX installation progra
   m. (C) ZZKJ 3/10/86. Printed in ACU
20 addr=HIMEM-551:IF addr<32736 THEN PRI
   NT"Load Failed":END
30 ad=addr:MEMORY addr-1
40 FOR l=0 TO 65:t=0:FOR f=0 TO 7:READ a
   $:a=VAL("&"+a$):t=t+(f+1)*(a AND &7FF
   F)
50 IF a<0 THEN a=a-&8000+addr:POKE ad+f,
   (a+&8000)AND 255:f=f+1:a=INT(a/256)
60 POKE ad+f,a:NEXT:ad=ad+f:READ a$
70 IF HEX$(t,4)<>a$ THEN PRINT"Data erro
   r in line ",90+l*10:MEMORY addr+551:E
   ND
80 NEXT:CALL addr:MEMORY addr+32-1:END
90 DATA 3A,D1,BC,2A,D2,BC,32, 8023,0FB0
100 DATA 22, 8024,3E,C3,21, 8020,06D7
110 DATA 32,D1,BC,22,D2,BC,01, 8031,0EA1
120 DATA 21, 8222,C3,D1,BC,22, 8220,21DC
130 DATA 00,00,00,53,59,53,45,D8,0D9E
140 DATA 46,43,41,4C,CC,00, 8026,07C5
150 DATA 18,48,00,FE,02,38,6E,3D,0AE4
160 DATA 3D,F5,6F,26,00,29,DD,E5,1235
170 DATA D1,19,5E,23,56,23,4E,23,0863
180 DATA 7E,B7,20,05,79,FE,FC,38,1355
190 DATA 03,F1,18,51,F1,EB,C3,1B,13D5
200 DATA 00,CD, 80AD,CD, 818E,3E,12E6
210 DATA 3A,CD,5A,BB,CD, 81C2,3E,164B
220 DATA 2C,CD,5A,BB,1A,B7,20,F4,130C
230 DATA 3E,0D,CD,5A,BB,3E,0A,C3,0FA0
240 DATA 5A,BB,F5,AF,32, 8216,32,1679
250 DATA  8217,ED,43, 8218,21, 8220,2249
260 DATA 22, 821A,CD, 8073,F1,FE,1850
270 DATA 01,28,2B,30,0F,CD, 813A,0F41
280 DATA 38,64,20,03,69,26,00,CD,0AC5
290 DATA  805C,18,F1,CD, 8102,3E,1065
300 DATA 04,D5,E6,7F,3C,47,11, 81FA,1979
310 DATA 1A,13,B7,07,30,FA,10,F8,117D
320 DATA CD, 81C2,D1,C9,DD,6E,00,13B2
330 DATA DD,66,01,7C,B7,20,0B,4D,0AA4
340 DATA E5,CD, 8155,E1,CD, 805C,1235
350 DATA 18,2B,46,23,7E,23,66,6F,0B56
360 DATA 78,B7,28,B8,32, 81D8,22,1258
370 DATA  821C,CD, 813A,F5,C5,CD,1AF4
380 DATA  81D3,C1,20,05,F1,CD, 810A,1840
390 DATA F5,04,1A,B7,20,EF,F1,20,11F8
400 DATA E8,17,30,E5,ED,4B, 8218,1A45
410 DATA C3,18,B9,C9,C5,F5,CD, 80AD,1ADC
420 DATA F1,F5,20,0A,69,60,CD, 818E,19BB
430 DATA 3E,2C,CD,5A,BB,06,00,E1,0F38
440 DATA E3,E5,4C,2A, 821E,09,09,0F56
450 DATA 09,CD, 818E,3E,3A,CD,5A,114A
460 DATA BB,CD, 81C2,CD, 8073,C1,1456
470 DATA F1,C9,2A, 821A,5E,23,56,1142
480 DATA 7A,B3,28,27,EB,22, 821A,170D
490 DATA 23,23,7E,23,66,6F,7C,B7,1023
500 DATA 3E,03,20,0D,4D,C5,CD,0F,0D0A
510 DATA B9,C1,21,04,C0,3A,00,C0,0DCA
520 DATA BF,5E,23,56,23,22, 821E,1389
530 DATA 06,00,C9,3A, 8216,4F,CD,1648
540 DATA 15,B9,0C,28,17,3D,28,F7,0CFC
550 DATA E2, 8185,3A, 8217,B7,20,1548
560 DATA EE,3C,32, 8217,79,32, 8216,1F3C
570 DATA 0D,18,C9,37,C9,D5,06,20,0D89
580 DATA 11,10,27,CD, 81AF,11,E8,13FC
590 DATA 03,CD, 81AF,11,64,00,CD,0FBF
600 DATA  81AF,11,0A,00,CD, 81AF,12A1
610 DATA 7D,C6,30,D1,18,10,AF,3C,0D5E
620 DATA ED,52,30,FB,19,3D,20,03,08F0
630 DATA 78,18,03,06,30,80,C3,5A,0CDE
640 DATA BB,3E,01,CD,5A,BB,1A,E6,1278
650 DATA 7F,CD,5A,BB,1A,13,17,30,0928
660 DATA F0,C9,D5,2A, 821C,06,00,105F
670 DATA D5,18,0F,10,03,D1,D1,C9,1266
680 DATA 1A,B7,07,30,03,D1,18,0C,085A
690 DATA 13,23,1A,E6,7F,BE,28,EB,139E
700 DATA D1,1A,B7,07,13,30,DC,E1,11D1
710 DATA C9,FF,46,4F,52,C5,42,41,0EE3
720 DATA 43,CB,45,58,54,CE,52,53,0F56
730 DATA 58,A0,42,61,64,20,63,6F,0CC3
740 DATA 6D,6D,61,6E,E4,00,00,00,0896
```

Printers mate

What was the first thing that you bought after your printer? A printer buffer or a coffee maker? If you had the money to afford the buffer, you will probably find this bit of little use. However, if your programming is being held up by your printer here is the solution – and it's completely free from caffeine!

Type in the program and SAVE it. If it says Load Failed and stops when run himem is too low, and the RSXs can't be installed.

The program automatically relocates the machine code, so it can put it anywhere in memory, – but it can't be put lower than 32768. If the program stops and says Data error in line XXX there is an error in your typing in of DATA, and XXX is the line of the Basic program containing the error.

Check the line indicated, and then re-run the program. If all the DATA is correct the program will install the RSXs, you will get the Ready message, and the program will end. The RSXs are now ready for use.

The program creates two RSXs called |FTOP and |FTOPSTOP. To send a file to the printer use the command |FTOP, a$' (where a$ is the file name of the Ascii file that you want to print). The disc will then be checked for the file, and any errors will be reported. If all is OK the command will set itself up and return.

The computer will now be back in your control, except that ticking away in the background with all the other system routines is an extra little routine that is sending your file to the printer. The only visible evidence that it is there is that your printer is printing, and that the disc drive will occasionally spin for a second.

When the routine reaches the end of the file it will turn itself off. If you want to stop it before the end of the file just type in the command |FTOPSTOP.

If your printer has a buffer (most of them do) it will carry on printing until the buffer is empty, but the computer will not be sending anything else to it, as the routine will have been turned off.

The command works by opening the file for input, and if all is well then it sets up an interrupt routine to do the printing. The routine first checks that

the printer is not busy, and if it isn't it reads a character from the file and sends it to the printer.

This is an Interrupt Mode 2 routine and *not* an event. It had to be done this way because the disc rom will crash if a disc access is attempted by an event routine.

This means that although the routine is compatible with event routines, it is not compatible with other Interrupt Mode 2 routines, because it will turn them off when it is activated, and will not turn them back on when it has finished.

There are a few points to note when using this routine. If it is not active (not sending a file to the printer), the system is exactly as normal. However, when it is active you cannot send anything to the printer yourself (this is to stop the printer getting garbage).

You also cannot use disc input (LOAD or OPENIN) because the Amstrad can only have one input file open at any one time and the routine is using it. If you do try to LOAD a program or OPENIN a text file, it will say Stream in use and won't do it.

However all other disc commands (CAT, SAVE, OPENOUT, |DIR, and so on) will work normally except that you should always turn your printer offline before accessing the disc, and online when you've finished. This is to stop the slight possibility of your command and the routine trying to access the disc at once.

You must NEVER take the disc out of the drive unless you turn the printer offline first and then back online when you have put it back in the drive.

If you don't turn the printer offline, and a disc access is attempted by the routine, you will get the standard error messages on the screen, which is extremely annoying if you happen to be doing a bit of editing at the time!

The reason why turning the printer offline stops any disc access by the routine is that the routine will then be unable to send anything to the printer, and so it won't try to read any characters from the input file, which means that there is no chance of it trying to access the disc.

I find this routine invaluable whenever I'm not using a 6128 and am working on a large program; for example if you want a listing of a Basic program that you're working on, use the following command line:

a$="LISTING.TXT":SAVE a$: |FTOP,@a$

It is also useful for typing out text files from Basic, since there is no TYPE command in the disc rom; the only other way to do it is to write a program, or go into CP/M – which won't work if the disc is of DATA format.

I hope you find this routine as useful as I do, and if you've been interested enough to read this far you probably will.

```
10 ' Print spooler installation program.
   (C) ZZKJ 12/10/86. Printed in ACU
20 addr=256*INT((HIMEM-2771)/256):IF add
   r<32768 THEN PRINT"Load Failed":END
30 ad=addr+400:h=HIMEM:MEMORY addr-1
40 FOR l=0 TO 39:t=0:FOR f=0 TO 7:READ a
   $:a=VAL("&"+a$):t=t+(f+1)*(a AND &7FF
   F)
50 IF a<0 THEN a=a-&8000+addr:POKE ad+f,
   (a+&8000)AND 255:f=f+1:a=INT(a/256)
60 POKE ad+f,a:NEXT:ad=ad+f:READ a$
70 IF HEX$(t,4)<>a$ THEN PRINT"Data erro
   r in line ",90+l*10:MEMORY h:END
80 NEXT:CALL addr+400:END
90 DATA 21, 8000,54,1E,01,01,00,0214
100 DATA 01,7C,32, 823A,3C,77,ED,1688
110 DATA B0,67,6F,36,C3,23,11, 829A,1D8B
120 DATA 73,23,72,01, 81C2,21, 8010,0C44
130 DATA C3,D1,BC,46,54,4F,D0,46,110F
140 DATA 54,4F,50,53,54,4F,D0,00,0C5C
150 DATA  81B5,18,20,00,3A, 8014,0465
160 DATA 3D,C0,32, 8014,ED,56,21,0B93
170 DATA  8015,11,77,BC,01,09,00,0615
180 DATA ED,B0,11,2B,BD,0E,09,ED,0ED8
190 DATA B0,C3,7A,BC,3D,20,57,DD,11CE
200 DATA 6E,00,DD,66,01,46,23,7E,0B2B
210 DATA 23,66,6F,11, 82D3,CD,77,19F2
220 DATA BC,C8,30,47,E6,07,FE,06,0FC2
230 DATA 20,46,3E,01,32, 8014,21,03E4
240 DATA 77,BC,11, 8015,01,09,00,02BB
250 DATA E5,ED,B0,21,2B,BD,0E,09,0B42
260 DATA ED,B0,06,03,E1,11, 8296,1950
270 DATA 36,C3,23,73,23,72,23,10,08C1
280 DATA F7,21,B7,C9,22,2B,BD,2E,0EC9
290 DATA 37,22,2E,BD,22,31,BD,3E,0CE4
300 DATA 00,ED,47,ED,5E,C9,21, 825A,20A6
310 DATA 18,0B,21, 826A,18,06,CD,115B
320 DATA 7D,BC,21, 8282,7E,CD,5A,17BF
330 DATA BB,23,FE,07,C8,18,F6,0D,0FB1
340 DATA 0A,42,61,64,20,63,6F,6D,0CA4
350 DATA 6D,61,6E,64,0A,0D,07,0D,0522
360 DATA 0A,49,6E,70,75,74,20,73,0D1F
370 DATA 74,72,65,61,6D,20,69,6E,0D3B
380 DATA 20,75,73,65,0A,0D,07,0D,0510
390 DATA 0A,46,69,6C,65,20,74,79,0D2E
400 DATA 70,65,20,65,72,72,6F,72,0EAD
410 DATA 0A,0D,07,3E,0E,B7,C9,CD,11A8
420 DATA 38,00,F5,CD, 8021,38,2E,09E8
430 DATA 3A, 8014,3D,20,28,3D,32,0621
440 DATA  8014,C5,D5,E5,DD,E5,FD,1D89
450 DATA E5,CD,80,BC,30,09,CD, 8021,0EB8
460 DATA DC,86,BC,D4, 8024,3E,01,09DA
470 DATA 32, 8014,D4, 81C7,FD,E1,1A80
480 DATA DD,E1,E1,D1,C1,F1,C9,00,1770
```

That's it from ZZKJ, until he has some more brilliant ideas. Until then, you'll have to make do with Justin and me.

Accidents will happen

While doing his best Way of the Exploding Ferret impersonations this week, yours one-and-only managed to give a compound fracture to my left, middle toe. The X-ray looked just like crazy paving. Due to the proximity of the injury to my brain, some of the stranger pieces in this month's column can be explained away.

Later, while pondering over the remnants of a party having consumed plenty of general anesthetic for the toe, I noticed a weeny concertina (concertina – bellows containing a drunk tomcat. It's also not in LocoSpell) of paper on the floor with numbers on it. OK, so I did originally think it might be some money. Anyway, it turned out to be a trick out of a cracker.

What you had to do was to point out which of the sections of this bit of card had your number on it, and the other person would tell you the number you thought of. Clever eh? Anyway, here is a listing of a program to print out such cards on your printer, and instructions on how to do the trick.

```
10 REM ** Magic Card Generator by
20 REM ** The Hairy Hacker and a
30 REM ** familiar furry creature
40 REM ** from the Crab Nebula, badly
50 REM ** disguised as a cat.
60 REM **
70 ZONE 6
80 MODE 1
90 INPUT "How many cards do you want ";n
100 s=0:REM To go to a printer use s=8
110 FOR i=0 TO n-1
120 PRINT"Press space for next card"
130 WHILE INKEY$<>" ":WEND:CLS
140 PRINT#s:PRINT#s,"Card ";i+1
150 FOR j=1 TO 2↑n
160 IF ((2↑i) AND j) <> 0 THEN GOSUB 200
170 NEXT j,i
180 PRINT#s
190 END
200 REM ** Print out 8 numbers on a row
210 PRINT#s,j,
220 l=l+1
230 IF l>7 THEN l=0:PRINT#s
240 RETURN
```

Mallard Basic users can miss out ZONEs, MODES, CLS and so on and replace PRINT#'s with LPRINT.

Right, all you do is tell the victim to think of a number between one and the last value on the card. Then ask the poor soul to give you all the cards with the number on them.

With me so far? All you then do is add up all the numbers in the top left corner of every card you have (NOT the card number), and that is their chosen number. Go on then, figure out how it works.

The program gives you a choice of how many cards you want to use, and pauses between printing each one so you can change the paper. Notice that the variable S has to be changed to 8 before things print on the printer (line 100). This is so you can get the program right before printing off 10 reams of gibberish, and practice on the screen first.

You can choose any number of cards between 4 and 16. The latter requires several pages of output per card, and I find about 8 is most impressive. Remember to get Mummy to help you with the scissors when you cut the cards up!

Oh yes, a big thank you to all who sent in Christmas presents to me. Cheers Mum.

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Justin's pokes

What next? Oh, pokettes from Justin. I like this bit, Basically because I'm a born cheat and all-time loser at arcade games (except Moon Cresta). This week though, you can't blame me for typing errors in the listings; I got the wife to do it. You trust Suz, don't you?

Straight in we go, with both tape and disc versions of Space Harrier. Up and at 'em:

```
5 REM ***** INFINITE LIVES FOR THE CASSE
  TTE VERSION OF SPACE HARRIER *****
7 REM ***** Either rewind the tape to th
  e start or skip the first file then ru
  n the routine *****
10 MEMORY 35999
20 MODE 0
30 FOR a=0 TO 15:READ b:INK a,b:NEXT
40 BORDER 0
50 CLS
60 LOAD "!screen",49152
70 OPENOUT "d
80 MEMORY 949
90 CLOSEOUT
100 LOAD "!block",950
110 POKE 3444,0
120 CALL 950
130 DATA 0,26,6,0,0,9,2,25,15,3,16,10,13
    ,21,14,20
```

```
10 REM ***** INFINITE LIVES FOR THE DISC
   VERSION OF ELITE'S SPACE HARRIER ***
   **
20 REM Insert the disc and run the below
   routine *****
30 MODE 1:MEMORY 12345:REM I think that
   must be a number taken at random (H.H
   .Wife)
40 LOAD "elite"
50 POKE &8DAB,201
60 CALL &8D6D
70 POKE &D74,0
80 CALL &3B0
```

I have always sympathised with Shaggy in Scooby-doo. He could've done with the likes of this poke for the disc version:

```
10 REM ***** INFINITE LIVES FOR THE DISC
   VERSION OF SCOOBY DOO *****
20 REM ***** Rewind the tape to the star
   t and run the routine *****
30 REM ***** Sorry! Force of habit I'm a
   fraid *****
40 REM ***** Just rewind the disc to the
   start ... No ahh *****
50 REM ***** Insert the disc and then ru
   n the routine, That'll do it *****
60 REM ***** I think Justin has spent to
   much time with small furry creatures
   from the Crab Nebula (H.H.wife)
70 MODE 1:OPENOUT "d":MEMORY &5DB
80 LOAD "elite"
90 POKE &65A,0
100 POKE &65B,1
110 FOR n=&100 TO &106
120 READ a$:POKE n,VAL("&"+a$)
130 NEXT n
140 CALL &5DC
150 DATA af,32,26,7a,c3,e8,66
```

Who has spotted the fatal bug in the 15% extra Ribena fiasco ? The clever muggers made the carton 15% bigger, and left the straws the same size. Slurp! Speaking of copouts, hére's the pokeykins for Microgens' Cop Out:

```
10 REM ***** INFINITE LIVES FOR MICROGEN
   'S COP OUT *****
20 REM ***** Rewind the small furry crea
   ture from the Crab Nebula cunningly d
   isguised as a cassette tape to the st
   art and run the below routine *****
30 MODE 1:MEMORY &1FFF
40 LOAD ""
50 POKE &202F,&70
60 POKE &2030,0
70 FOR n=&70 TO &76
80 READ a$:POKE n,VAL("&"+a$)
90 NEXT n
100 CALL &2000
110 DATA af,32,5b,1
```

Remember, if you've got the odd poke you don't want, the occasional peek you're sick of the sight of, send them to me, at the Hairy Hacker's Hovel C/o the magazine, and I'll palm them off on everybody else.

Worthy contributions get a Hack of The Month award. Notice the lack of worthy contributions this month. Even you might be in with a chance?

Oh and an odd little thing the Ed noticed in Jailbreak. When you run the disc with a RUN"JAIL", your screen goes black, the computer resets and a mystical hand types CPM, yes? Well not quite, you can just catch a glimpse of the words 512K Computer (c)1999 Amstrad Consumer Electronics. Do Konami know something we don't – I doubt it.

Listing I

```
10 REM Disc based ELITE Character design
   er (C) ZZKJ 16/9/1986. Printed by ACU
   .
20 DEF FN p(x)=PEEK(dat+x):MEMORY &38CA:
   dat=&38CB:mcode=30000:wtk=&BB06
25 ct=&8F5F:KEY 140,"GOTO 1420"+CHR$(13)
   :IF PEEK(&8840)=58 THEN 30
26 MODE 1:LOCATE 1,13:PRINT"Put ELITE di
   sc in drive and press a key":CALL wtk
27 LOAD"LARGEAXX.BIN",&8840:POKE &8F64,&
   8A
30 BORDER 0:GOSUB 1440:INK 0,1:INK 1,20:
   INK 2,15,25:INK 3,14:PEN #1,1
40 x$=CHR$(224)+".":c$=CHR$(18):e$="Pres
   s ENTER to change "
50 b$=CHR$(242)+CHR$(154)+CHR$(154):r$=C
   HR$(154)+CHR$(154)+CHR$(243)
60 LOCATE 6,2:PEN 2:PRINT"E L I T E  Cha
   racter Designer":PEN 1
70 LOCATE 6,12:PRINT"(C) ZZKJ 1986, Prin
   ted by ACU"
80 FOR n=mcode TO mcode+10:READ a:POKE n
   ,a:NEXT
90 ad=dat:READ a:WHILE a<900:IF a THEN P
   OKE ad,a:ad=ad+1:GOTO 110
100 READ a:FOR ad=ad TO ad+a:POKE ad,0:N
    EXT
110 READ a:WEND:n$="JAMESON":spec=0
120 DIM e$(9):FOR n=1 TO 9:READ e$(n):NE
    XT
130 DIM r$(9):FOR n=1 TO 9:READ r$(n):NE
    XT
140 DIM p$(4):FOR n=1 TO 4:READ p$(n):NE
    XT
150 DIM l$(4):FOR n=1 TO 4:READ l$(n):NE
    XT
160 DIM c$(17):FOR n=1 TO 17:READ c$(n):
    NEXT
170 REM main option loop
180 POKE dat+92,spec:PRINT#1,"1=Characte
    r, 2=Cargo, 3=Station, 4=Save"
190 k$="":WHILE k$="":k$=INKEY$:WEND:IF
    INSTR("1234",k$)=0 THEN 190
200 ex=0:ON ASC(k$)-48 GOSUB 210,1100,12
    80,1310:GOTO 180
210 REM Alter Character
220 GOSUB 1440:INK 0,1:INK 1,20:INK 2,15
    :INK 3,14:par=1:parm=22:spec=FNp(92)
230 LOCATE 7,2:PEN 2:GOSUB 1470:PEN 1
240 LOCATE 1,4:PRINT"Galaxy: ";FNp(17)+1
    ;
250 PRINT"    Fuel: ";USING "##.#";FNp(4
    6)/10;:PRINT" Light Years"
260 n=FNp(20)+256*FNp(21)+10000*FNp(18)+
    2560000*FNp(19)
270 PRINT"Cash: ";USING "#########.#";n/
    10;:PRINT" Cr"
280 PRINT"Legal Status: ":n%=FNp(11):GOS
    UB 1490
290 PRINT"Rating: ";:n=FNp(14):IF n THEN
    320
300 n=FNp(13)-1:IF n<8 THEN n=7
310 PRINT r$(LEN(BIN$(n))-2):GOTO 360
320 IF n<3 THEN PRINT r$(6):GOTO 360
330 IF n<11 THEN PRINT r$(7):GOTO 360
340 IF n<26 THEN PRINT r$(8):GOTO 360
350 PRINT r$(9)
360 PRINT"EQUIPMENT:":PRINT TAB(5);"Numb
    er of Missiles: ";USING "###";FNp(47
    )
370 FOR n=1 TO 9:PRINT TAB(5);e$(n):NEXT
380 FOR n=1 TO 4:PRINT TAB(5);:p=FNp(40+
    n):IF p=0 THEN PRINT"No ";
390 PRINT p$(n);:IF p THEN PRINT l$(p);
400 PRINT"Laser":NEXT
410 PRINT TAB(5);"Cloaking Device";TAB(2
    7);:p=spec AND 64:GOSUB 1710
420 LOCATE 27,10:p=FNp(48):GOSUB 1710:p=
    FNp(49):GOSUB 1710
430 p=spec AND 128:GOSUB 1710
440 FOR n=1 TO 6:p=FNp(51+n):GOSUB 1710:
    NEXT
450 WHILE (ex=0):IF par>7 THEN 470
460 ON par GOSUB 510,550,680,710,750,810
    ,850:GOTO 500
470 yps=par+1:LOCATE 1,yps:PEN 2:PRINT r
    $:PEN 1
480 ON par-7 GOSUB 910,950,960,970,1000,
    1000,1000,1000,1000,1000,1020,1020,1
    020,1020,1070
490 LOCATE 1,yps:PRINT"   "
500 WEND:RETURN
510 PRINT#1,"1=COMMANDER, 2=ARCHANGEL":i
    n$="12":PEN 2:LOCATE 1,2:PRINT r$
520 GOSUB 1540:IF k$="" THEN PEN 1:LOCAT
    E 1,2:PRINT"   ":RETURN
530 IF k$="1" THEN spec=spec AND 247 ELS
    E spec=spec OR 8
540 LOCATE 7,2:GOSUB 1470:GOTO 520
550 PRINT#1,e$;"character's name":in$=CH
    R$(13):yps=2:GOSUB 1520:PEN 2
```

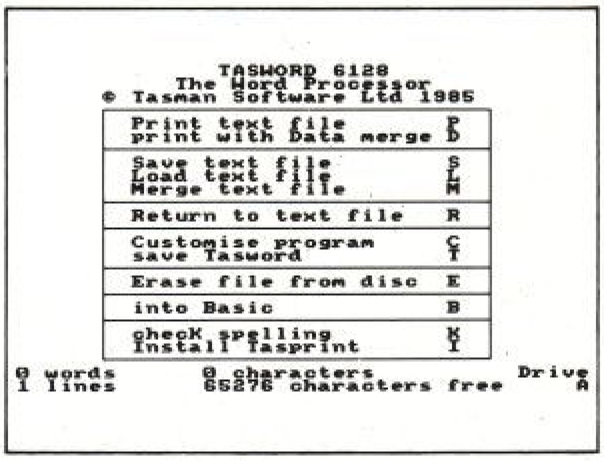
```
560 GOSUB 1540:IF k$="" THEN PEN 1:GOTO
    1530
570 WINDOW SWAP 0,1:PRINT"Type in new na
    me: ";n$="":n=0:CALL &BB81
580 k$="":WHILE k$="":k$=UPPER$(INKEY$):
    WEND
590 IF ASC(k$)=13 THEN CALL &BB84:GOTO 6
    60
600 IF ASC(k$)=127 AND n>0 THEN n=n-1:n$
    =LEFT$(n$,n):PRINT CHR$(8);CHR$(16);
610 IF n=10 THEN 580
620 IF k$<"0" THEN 580
630 IF k$>"9" AND k$<"A" THEN 580
640 IF k$>"Z" THEN 580
650 n$=n$+k$:n=n+1:PRINT k$;:GOTO 580
660 WINDOW SWAP 0,1:LOCATE 17,2:PRINT n$
    ;c$
670 FOR n=1 TO n:POKE dat-1+n,ASC(MID$(n
    $,n,1)):NEXT:POKE dat-1+n,0:GOTO 550
680 PRINT#1,"Press galaxy number 1-8":LO
    CATE 12,4:PEN 2:PRINT b$:PEN 1
690 in$="12345678":GOSUB 1540:IF k$="" T
    HEN LOCATE 12,4:PRINT"  ":RETURN
700 LOCATE 10,4:PRINT k$:POKE dat+17,ASC
    (k$)-49:GOTO 690
710 PRINT#1,e$;"fuel":in$=CHR$(13):LOCAT
    E 12,4:PEN 2:PRINT r$:PEN 1
720 GOSUB 1540:IF k$="" THEN :LOCATE 12,
    4:PRINT"  ":RETURN
730 PRINT#1,"Enter 10 times fuel (0-25.5
    ): ";:GOSUB 1620
740 LOCATE 22,4:PRINT USING "##.#";n%/10
    :POKE dat+46,n%:GOTO 710
750 PRINT#1,e$;"cash":yps=5:GOSUB 1520
760 in$=CHR$(13):GOSUB 1540:IF k$="" THE
    N GOTO 1530
770 INPUT #1,"Type in cash in credits: "
    ;n:n=n*10:IF n>655359999 THEN 770
780 nh=INT(n/10000):nl=n-nh*10000:n1=INT
    (nh/256):n2=nh-256*n1:n3=INT(nl/256)
790 n4=nl-256*n3:POKE dat+19,n1:POKE dat
    +18,n2:POKE dat+21,n3:POKE dat+20,n4
800 LOCATE 7,5:PRINT USING"#########.#";
    n/10;:PRINT" Cr":GOTO 750
810 PRINT#1,e$;"Legal Status":yps=6:GOSU
    B 1520
820 in$=CHR$(13):GOSUB 1540:IF k$="" THE
    N GOTO 1530
830 PRINT#1,"0=Clean 1-49=Offender 50+=F
    ugitive: ";:GOSUB 1620
840 POKE dat+11,n%:GOSUB 1490:GOTO 810
850 PRINT#1,"Press Rating number 1-9":in
    $="123456789":yps=7
860 GOSUB 1520:GOSUB 1540:IF k$="" THEN
    GOTO 1530
870 LOCATE 9,7:POKE dat+13,0:POKE dat+14
    ,0:p=ASC(k$)-47:PRINT r$(p-1);c$
880 IF p=1 THEN 860 ELSE IF p<8 THEN POK
    E dat+13,2^p+1:GOTO 860
890 IF p<10 THEN POKE dat+14,3+(p-8)*8 E
    LSE POKE dat+14,26
900 GOTO 860
910 PRINT#1,e$;"number of missiles":in$
    =CHR$(13):GOSUB 1540
920 IF k$="" THEN RETURN
930 PRINT#1,"Enter number of missiles (0
    -255): ";:GOSUB 1620
940 LOCATE 25,9:PRINT USING "###";n%:POK
    E dat+47,n%:GOTO 910
950 ofs=48:GOTO 1010
960 GOSUB 1720:IF k$="" THEN RETURN ELSE
     POKE dat+49,127*p:GOTO 960
970 GOSUB 1720:IF k$="" THEN RETURN
980 IF p THEN spec=spec OR 128 ELSE spec
    =spec AND 127
990 GOTO 970
1000 ofs=par-12+52
1010 GOSUB 1720:IF k$="" THEN RETURN:ELS
     E POKE dat+ofs,255*p:GOTO 1010
1020 PRINT#1,"Press ";p$(par-17);"Laser
     type (0-4):":in$="01234"
1030 GOSUB 1540:IF k$="" THEN RETURN
1040 p=ASC(k$)-48:POKE dat+par+23,p:LOCA
     TE 5,yps:IF p=0 THEN PRINT"No ";
1050 PRINT p$(par-17);:IF p THEN PRINT l
     $(p);
1060 PRINT"Laser";c$:GOTO 1030
1070 GOSUB 1720:IF k$="" THEN RETURN
1080 IF p THEN spec=spec OR 64 ELSE spec
     =spec AND 191
1090 GOTO 1070
1100 REM Alter your cargo
1110 GOSUB 1440:INK 0,4:INK 1,19:INK 2,2
     6:INK 3,14:LOCATE 5,2
1120 ofs=22:PEN 2:GOSUB 1470
1130 PRINT"S CARGO":par=1:opr=1:parm=17
     +(ofs>22)
1140 PEN 1:LOCATE 5,4:PRINT"PRODUCT
     QUANTITY":PRINT
1150 FOR n=1 TO parm:PRINT TAB(5);c$(n);
     TAB(20);USING"###";FNp(ofs+n):NEXT
1160 IF parm=16 THEN 1180 ELSE parm=18
1170 PRINT"    Refugees      ";:p=spec AN
     D 32:GOSUB 1750
1180 LOCATE 1,5+opr:PRINT "  ":IF ex TH
     EN RETURN
1190 opr=par:LOCATE 1,5+par:PEN 2:PRINT
     r$:PEN 1
1200 IF par=18 THEN 1240
1210 PRINT#1,e$;c$(par):in$=CHR$(13):GOS
     UB 1540:IF k$="" THEN 1180
1220 PRINT#1,"Type in quantity of ";c$(p
     ar);": ";:GOSUB 1620
1230 POKE dat+ofs+par,n%:LOCATE 20,5+par
     :PRINT USING"###";n%:GOTO 1210
1240 PRINT#1,"Refugees: 1=Present, 0=Not
     Present":in$="10"
1250 GOSUB 1540:IF k$="" THEN 1180 ELSE
     LOCATE 18,23:p=ASC(k$)-48
1260 IF p THEN spec=spec OR 32 ELSE spec
     =spec AND 223
1270 GOSUB 1750:GOTO 1250
1280 GOSUB 1440:INK 0,9:INK 1,25:INK 2,2
     4:INK 3,18:ofs=73:LOCATE 5,2:PEN 2
1290 PRINT"SPACE STATION";:GOTO 1130
1300 REM Save Commander
1310 GOSUB 1440:INK 0,3:INK 1,25:INK 2,6
     :INK 3,26:LOCATE 9,2:PEN 2
1320 PRINT"ACCESS MENU":PEN 1:LOCATE 4,7
1330 PRINT"1 Reset to initial JAMESON da
     ta"
1340 LOCATE 4,9:PRINT"2 Save ";:GOSUB 14
     70
1350 LOCATE 4,11:PRINT"3 Exit to designe
     r main menu"
1360 k$="":WHILE k$="":k$=INKEY$:WEND:IF
     INSTR("123"+x$,k$)=0 THEN 1360
1370 IF k$="1" THEN RUN
1380 IF k$<>"2" THEN RETURN
1390 PRINT#1,"Insert disc, then press a
     key":CALL wtk:INK 0,9:INK 1,19:INK
     2,22
1400 crc=0:sum=0:FOR n=0 TO 101:crc=crc
     XOR FNp(n):sum=sum+FNp(n):NEXT
1410 sum=(sum+crc) AND 255:POKE dat+102,
     crc:POKE dat+103,sum:CALL ct
1415 WINDOW SWAP 0,2:SAVE LEFT$(n$,8),b,
     &38CB,&68
1420 CALL ct:CLS:WINDOW SWAP 0,2:INK 0,3
     :INK 1,25:INK 2,6:WINDOW SWAP 0,1:G
     OSUB 1470
1430 PRINT" Saved. Press a key":CALL wtk
     :CLS:WINDOW SWAP 0,1:GOTO 1360
1440 MODE 1:WINDOW 2,39,1,24:WINDOW #1,1
     ,40,25,25:WINDOW #2,5,37,13,16:ZONE
     19
1450 PLOT 0,16,3:DRAWR 639,0:DRAWR 0,383
     :DRAWR -639,0:DRAWR 0,-383
1460 MOVE 0,360:DRAWR 639,0:RETURN
1470 IF spec AND 8 THEN PRINT"ARCHANGEL
     "; ELSE PRINT"COMMANDER ";
1480 PRINT n$;:RETURN
1490 LOCATE 15,6:IF n%=0 THEN PRINT"Clea
     n    ":RETURN
1500 IF n%<50 THEN PRINT"Offender" ELSE
     PRINT"Fugitive"
1510 RETURN
1520 PEN 2:LOCATE 30,yps:PRINT b$:PEN 1:
     RETURN
1530 LOCATE 30,yps:PRINT "  ":RETURN
1540 k$="":WHILE k$="":k$=INKEY$:WEND
1550 IF ASC(k$)=240 THEN par=par-1:GOTO
     1590
1560 IF ASC(k$)=241 THEN par=par+1:GOTO
     1600
1570 IF INSTR(x$,k$) THEN ex=1:GOTO 1610
1580 IF INSTR(in$,k$) THEN RETURN ELSE 1
     540
1590 IF par<1 THEN par=parm
1600 IF par>parm THEN par=1
1610 k$="":RETURN
1620 n%=0:WINDOW SWAP 0,1:CALL &BB81
1630 k$="":WHILE k$="":k$=INKEY$:WEND
1640 IF ASC(k$)=13 THEN CALL &BB84:WINDO
     W SWAP 0,1:RETURN
1650 IF ASC(k$)=127 AND n% THEN n%=INT(n
     %/10):PRINT CHR$(8);CHR$(16);
1660 IF k$<"0" OR k$>"9" THEN 1630
1670 IF n%>25 THEN 1630
1680 IF n%=25 AND k$>"5" THEN 1630
1690 n%=10*n%+ASC(k$)-48:IF n% THEN PRIN
     T k$;
1700 GOTO 1630
1710 GOSUB 1750:LOCATE 27,VPOS(#0):RETUR
     N
1720 PRINT#1,"1=Present, 0=Not Present":
     in$="10":GOSUB 1540
1730 IF k$="" THEN RETURN
1740 LOCATE 27,yps:p=ASC(k$)-48
1750 IF p THEN PRINT"Present     " ELSE P
     RINT"Not Present"
1760 RETURN
1770 DATA 33,0,128,17,104,0,62,22,195,15
     8,188
1780 DATA 74,65,77,69,83,79,78,0,12,232,
     3,0,17,20,1,0,3,70,3,0,11,74,90,72,
     2,83
1790 DATA 183,56,173,156,20,29,21,5,3,17
     ,18,26,14,39,8,0,1,10,25,0,1,61,14,
     17
1800 DATA 12,0,2,39,8,1,42,77,143,242,13
     6,5,999
1810 DATA "Large Cargo Bay","E.C.M. Syst
     em","E.C.M. System Jammer","Fuel Sc
     oops"
1820 DATA "Escape Pod","Energy Bomb","En
     ergy Unit","Docking Computers"
1830 DATA "Galactic Hyperspace"
1840 DATA "Harmless","Mostly Harmless","
     Poor","Average","Above Average"
1850 DATA "Competent","Dangerous","Deadl
     y","---- E L I T E ----"
1860 DATA "Front ","Rear ","Left ","Righ
     t "
1870 DATA "Pulse ","Beam ","Military ","
     Mining "
1880 DATA "Food","Textiles","Radioactive
     s","Slaves","Liquor/Wines","Luxurie
     s"
1890 DATA "Narcotics","Computers","Machi
     nery","Alloys","Firearms","Furs"
1900 DATA "Minerals","Gold","Platinum","
     Gem-Stones","Alien Items"
```

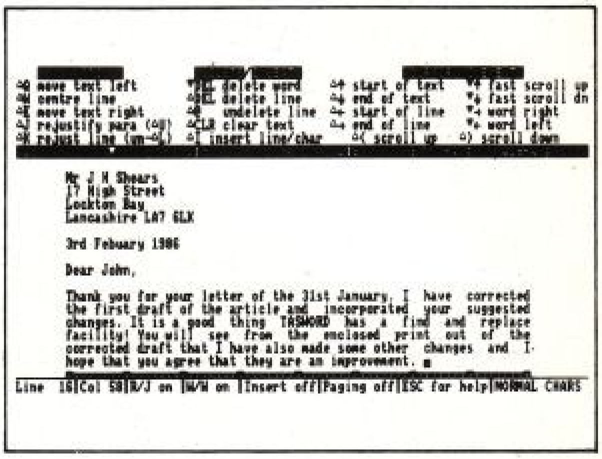
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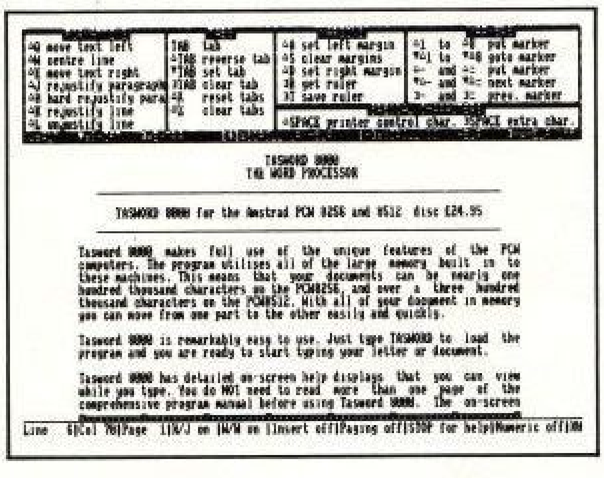
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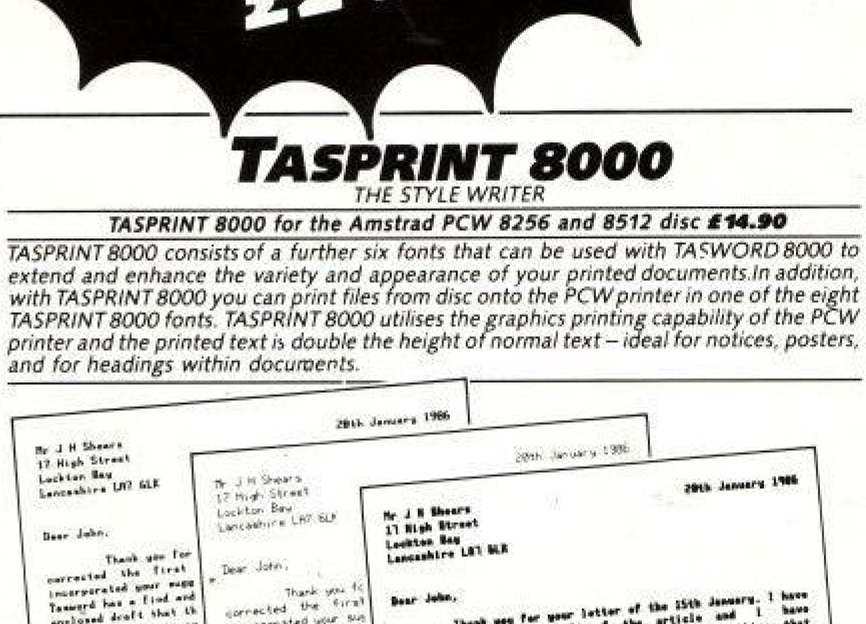
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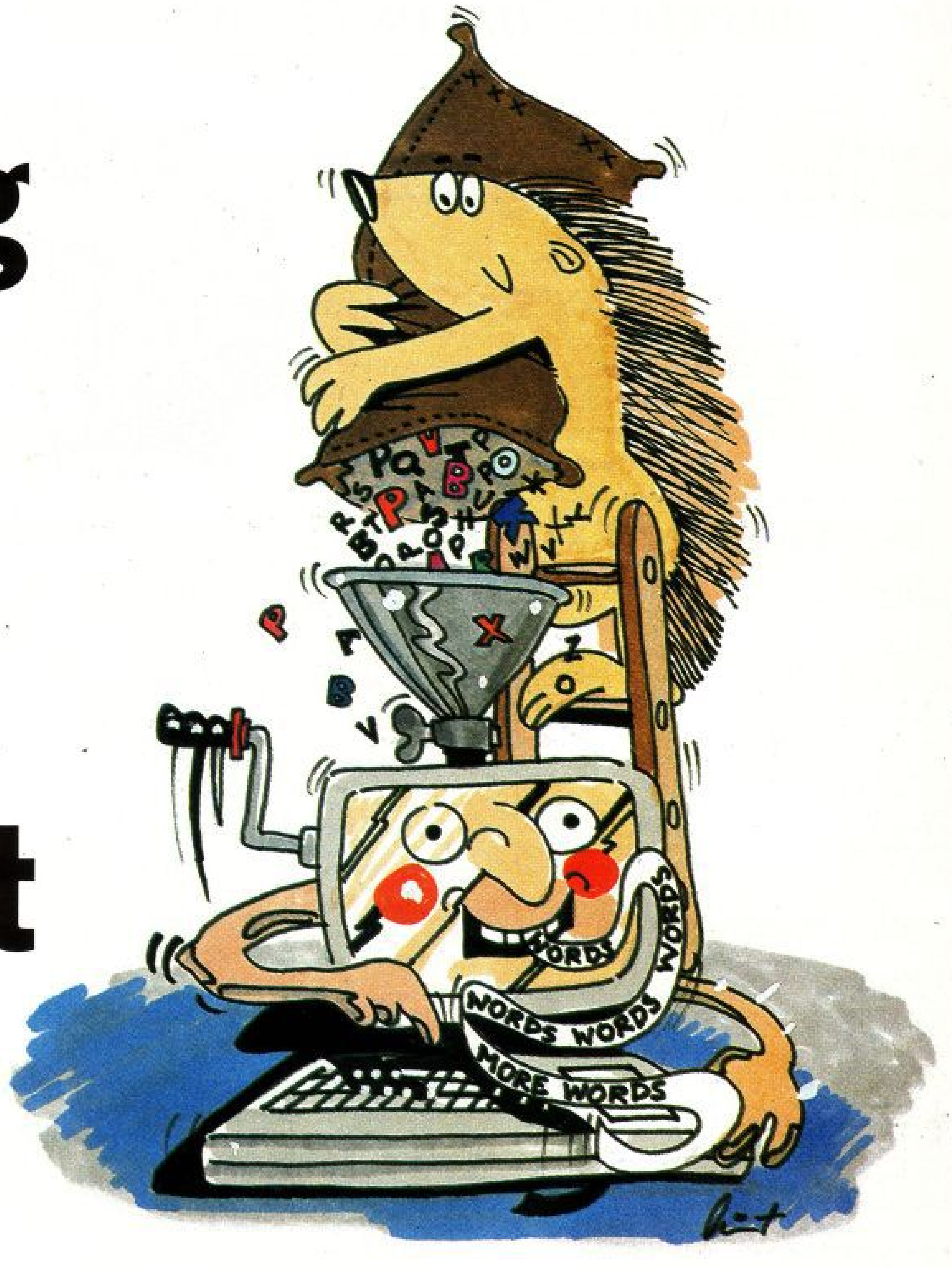
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Making the most of Protext



David Foster delves into his box of hints and tips

Protext, the word processor produced by Arnor, has now been available on the CPC range of computers for more than a year and there are several thousand users around the world.

One of the features of Protext, and indeed one of Arnor's specialities, is that not only is it on tape and disc, but a ROM version is also available.

Since its introduction, Protext has undergone a process of steady development, but upwards compatibility has always remained a priority and the developments have mostly taken the form of a number of small but important additions to the program.

At the same time several other programs have been launched by Arnor, all designed to work in conjunction with Protext until now we have Prospell, the spelling checker, Promerge, a mail merging program with many other enhancements and Promerge plus, which is only available on ROM and provides background printing, two file editing and box mode editing in addition to the mail merging facilities.

The end result is an integrated suite of programs which provides just about every facility the serious word processor user could want, while still retaining the basic simplicity of the original.

When I was asked to suggest some hints and tips for Protext users, I tried to confine them to the basic program and as far as possible to ones which will work with all versions from version 1.00.

The current product is V1.22 and I would suggest that anyone who has an early version should consider taking advantage of Arnor's upgrade facilities, as the enhancements such as decimal tabs and the extra stored commands, are well worth having.

I would also recommend that if at all possible you get the rom version as not only does it allow you to handle larger files (up to about 39k), but it is so convenient that you will find you make a lot more use of Protext.

Using 'template' files

Protext is very flexible in the facilities it provides to customise printing options and on all versions it is possible to set many of them by the use of stored commands as well as by the SETPRINT command, which provides the facility to redefine virtually all the parameters.

Having to set them each time you want to create a document is a nuisance and was never the intention.

Most people use only two or three different layouts for most of their word processing. For example, my most frequent requirements are a layout to suit a letter on single sheet stationery and layouts to suit single and double spaced manuscripts on continuous stationery.

There are two ways that these layouts can be created so as to be readily available at all times. The first and best way is to use stored commands to set the parameters such as top, bottom and side margins, line spacing and page length.

On later versions it is also possible to specify whether single sheet or continuous printing is required. If these stored commands are inserted at the start of a document they will override any default settings provided by SETPRINT, so the answer is to put them in an empty document and then to save this "template" with an appropriate name.

When you start a new document it is only necessary to load the appropriate file and all the parameters will be set automatically. Another advantage is that if you don't complete the document in one session and save it for later, when you load it again it will have the correct settings as the stored commands were saved with it.

An example of the stored commands I use for a letter on A4 paper is given in Figure I. This is saved on my disc with the highly original name, LETTER.

Several points are worth noting about it. Firstly the top margin is set to zero because my printer requires a lot of paper fed through before printing and when used with a page length of 66 gives a well proportioned letter with A4 paper.

Secondly, I wished to have any continuation sheets numbered, but not the first, headed, sheet and this is achieved by taking advantage of the fact that headers are only activated at the start of a new page.

So by inserting a blank line before the command which sets the header containing the page number, Protext thinks it has started printing the page and ignores the header command until it starts to print the second page, at which time it prints the header containing the page number, which is set to an initial value of 2 with the PN stored command.

Users of early versions will find that it will still be necessary to use SETPRINT to set some parameters, such as whether printing is to be done on continuous stationery or single sheet, but again there is an easy way to solve this problem.

If you use SETPRINT to set the required parameters they can be saved at the end, as part of the "Printer Driver". If you give it an appropriate name you can use the PRINTER command to load it again when you want to set the parameters for a new document.

This process can be automated even further by making use of the function keys as described below.

Function keys

The latest version of the manual gives a lot more detail about how to make good use of the function keys on the numeric pad to the right of the keyboard, but for the benefit of those people with earlier versions here are a few more details.

The KEY and KEY DEF commands available in Basic may be used to define strings of text and allocate them to any of the keys on the keyboard before entering Protext – or for that matter during its use – by temporarily exiting Protext with QUIT and then re-entering it with IP after defining a key.

Limitations are imposed by Amsdos on the total size of the strings, but again there is an easy way round this, which I shall cover shortly.

For example, typing KEY 128, 'CAT'+CHR$(13) will define key f0 so that pressing f0 in command mode will result in a catalogue of the currently selected disc drive. CHR$(13) is the value which is normally sent when the Enter/Return key is pressed, so this simulates pressing the Return key.

KEY 129, "This text will be entered into the document" will enter the string of text into the document when f1 is pressed while in edit mode. This is particularly useful if you are writing a document which contains words often repeated in it.

Key	code	Key	code
CTRL-@	0	CTRL-[	27
CTRL-A	1	CTRL-\	28
CTRL-B	2	CTRL-]	29
CTRL-C	3	CTRL-#	30
CTRL-D	4	CTRL-0	31
CTRL-E	5	CTRL-<	218
CTRL-F	6	CTRL->	219
CTRL-G	7	CTRL-)	220
CTRL-H	8	CTRL-(	221
CTRL-I	237	CTRL-*	222
CTRL-J	10	CTRL-+	223
CTRL-K	11	CTRL-hyphen	227
CTRL-L	12	CTRL-/	231
CTRL-M	238	CTRL-space	235
CTRL-N	14		
CTRL-O	15	UP CURSOR	240
CTRL-P	226	DOWN CURSOR	241
CTRL-Q	17	LEFT CURSOR	242
CTRL-R	18	RIGHT CURSOR	243
CTRL-S	19	SHIFT-UP	244
CTRL-T	20	SHIFT-DOWN	245
CTRL-U	21	SHIFT-LEFT	246
CTRL-V	22	SHIFT-RIGHT	247
CTRL-W	23	CTRL-UP	248
CTRL-X	24	CTRL-DOWN	249
CTRL-Y	25	CTRL-LEFT	250
CTRL-Z	26	CTRL-RIGHT	251
TAB	9	RETURN	13
SHIFT-TAB	228	SHIFT-RETURN	236
CTRL-TAB	225	CTRL-RETURN	236
CLR	16	COPY	224
SHIFT-CLR	229	SHIFT-COPY	233
CTRL-CLR	230	CTRL-COPY	234
DEL	127	ESC	252
CTRL-DEL	232		

Figure II: Protext command code values.

It is possible to define tokens 128 to 159 so that they contain whatever you want in the way of text or commands.

Tokens 128 to 137 are allocated by default to function keys 0 to 9 by Amsdos, but it is possible to allocate any expansion string tokens to any of the keys, either in normal, or SHIFTed states or with CONTROL pressed and the Amstrad manuals give full details of how to do this using the KEY DEF command.

The latest version of the manual also lists the code values given when the Protext editing commands are used and these are shown in Figure II. Armed with these figures you can now create strings which can be made to reproduce all sorts of complicated sequences of key presses which can be called by a single key press.

Additionally it is possible to use the KEY DEF command to redefine any of the Protext editing commands to carry out different functions. For example, Ctrl-D normally copies down Protext's default ruler and Ctrl-R copies the last ruler used, but I would have preferred that they copied my own default ruler and an alternate ruler I specified. The

```
>----!----------------------------------------------------------R
>CO A4 letter head - page 2 on numbered
>PL 66
>TM 0
>SM 8

>PN 2
>HE                              %
                                                 My Address
                                                 is here
```

Figure I: Example of a letter template

following expansion strings and key redefinitions allow me to do just that.

All I now have to do is make sure that line 1 of my template file contains my chosen alternate ruler and line 2 my default ruler.

The KEY DEF commands at the start of each line redefine keys D and R so that when they are pressed with Ctrl, they give the token values instead of their normal values.

If you follow the strings through,

```
10 KEY DEF 50,1,&72,&52,158:KEY 158,
CHR$(11)+CHR$(0)+"9"+CHR$(27)+CHR$
(233)+CHR$(241)+CHR$(233)+CHR$(0)+"9"
+CHR$(16)+CHR$(234)+CHR$(11)

20 KEY DEF 61,1,&64,&44,159:KEY 159,
CHR$(11)+CHR$(0)+"9"+CHR$(27)+CHR$
(241)+CHR$(233)+CHR$(241)+CHR$(233)
+CHR$(0)+"9"+CHR$(16)+CHR$(234)+CHR
$(11)
```

using the table in Figure II, you will see that they set a place marker at the cursor position, jump to the start of the document, set the two block markers, then return to the place marker and copy down the the ruler, before finally clearing the various markers. Another useful string is:

```
10 KEY 0,CHR$(252)+"S"+CHR$
(13)+CHR$(13)+CHR$(252)
```

Pressing key f0 while in edit mode will now automatically carry out a save of the document, which allows easil periodic saves for security purposes. The only restriction is that the file must already have been saved, so that it has a filename allocated.

It would obviously be more trouble than it was worth if you had to type all these commands in every time you wanted to use Protext, but again this can be automated very easily.

If you have the rom version you can easily create a short Basic program incorporating all these strings, finishing with the command IP, and save it with the name DISC.BAS, so that when you want to use Protext all that is required is to press Ctrl and the small Enter key, which is redefined by Protext to load a file called DISC.BAS

Disc version users can incorporate the Basic lines in the file on the Protext disc called DISC2.BAS which is provided for this purpose.

Sometimes the Amsdos limit of about 120 characters for the expansion string buffer is a bit limiting, but this can be rectified by the small piece of machine code in Figure III which provides whatever size of buffer you want.

This also can be incorporated in the basic loader described above. It is not a good idea to make the buffer larger than you really require, as it has the effect of reducing the size of the document which can be handled.

Hopefully these examples and suggestions will encourage you to experiment and create your own special version of Protext, making it even more convenient to use and powerful than it is already.

```
10 buffsize=1000:REM set to the buffer size you want
20 MEMORY HIMEM-15:hm=HIMEM+1
30 FOR n=0 TO 15:READ dat$:POKE hm+n,VAL("&"+dat$):NEXT
40 MEMORY HIMEM-buffsize:buffloc=HIMEM+1
50 CALL hm,buffloc,buffsize
60 DATA DD,6E,00,DD,66,01,DD,5E,02,DD,56,03,CD,15,BB,C9
```

Figure III: Routine to increase size of expansion string buffer

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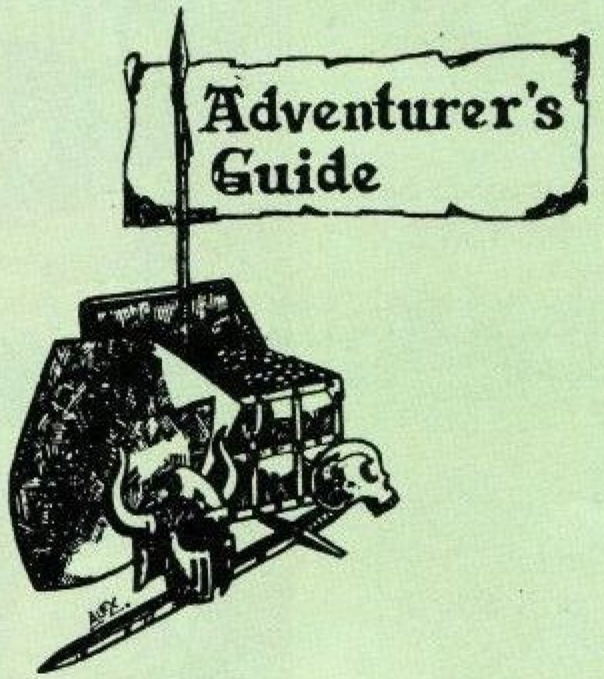
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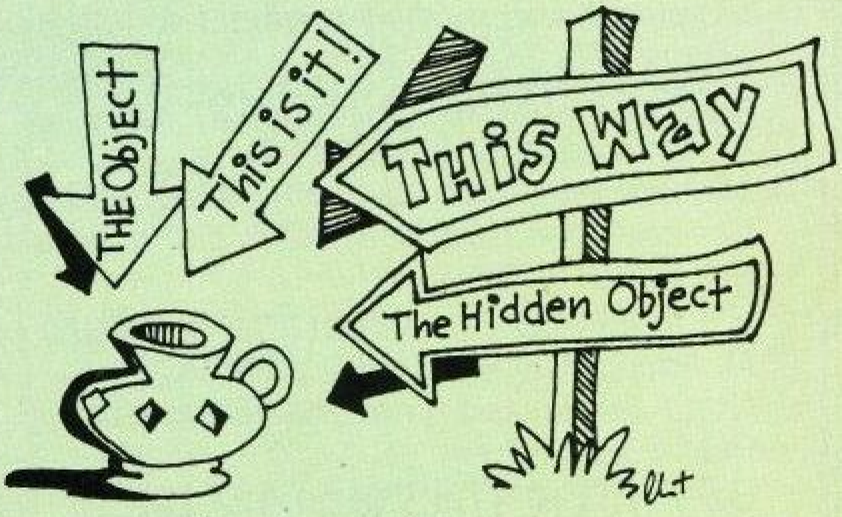
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Into adventures with Bill Brock



High road or low road?

Lately a great deal has been written about the latest and best in the way of operating systems for adventure games. I wonder what the players really think about all this. The operating system covers a number of different aspects of how well a game is going to play.

It can affect the speed with which new data is displayed on the screen and the way in which the command interpreter deals with the words you type in as an input to the computer.

Any gain in speed of play can only make a game better. There is nothing worse than to want get on with the adventure but to be held up by the computer working out what to do and display next. Any delay here can upset the player's concentration and subsequent enjoyment of the game. Fortunately most modern games have a very acceptable speed of operation.

That then leaves us with the command interpreter. The two major areas here are the size of the vocabulary and the way in which a program can deal with the number and order of the words you type in.

Some games are criticised for their poor vocabulary, often because interesting items are mentioned in the location description but are then not recognised when you try to examine them. One solution is to list the useful (or red herring) items after the description.

This works, but tends to make the game appear stilted and takes away the feeling of freedom of action. There is always the suspicion that someone has been there before you, deliberately putting out objects for you to find. There is a greater sense of achievement if you have thought to examine an object and found something hidden in it.

There are various dodges to make us think there is more to a game than there really is, but the best answer probably lies in how well the text is written. If location descriptions are well written the correct emphasis is put on those items we are supposed to react to and the rest of the text becomes merely supportive and does not encourage us to investigate further.

Just how input commands are dealt with is a very complex subject, involving a broad knowledge of linguistics and semantics. Many programs get round the problem by only accepting a limited number of words per command. The classic system was (and still is) a verb followed by a noun: GET BOOK: READ BOOK: DROP VASE: DROP VASE. Often such linking words A, AN, THE are just ignored to give the player a greater feeling of freedom.

A slightly expanded system allows for a greater number of words when special cases are met: GET THE RED BOOK or UNLOCK DOOR WITH IRON KEY.

This works well providing the programmer does not suddenly expect you to use a multi-word input without some form of warning: PLACE RUBY ON ROTATING TABLE might be a little unfair if only two word inputs were accepted everywhere else in the program.

Some modern adventures accept really complex inputs: TAKE PLANT FROM PLANT POT AND

PLANT IT IN THE BLACK SOIL. The aim here is to enable just about anyone to play the game without having to think in a special "adventure language". Sadly our computer's memories are still not big enough to cover every way in which people are likely to say the same thing but with either different words or sentence construction.

Certainly these advanced parsers are marvellous to watch in operation – but do we use their full



capabilities? I doubt it.

I for one stick to the basic two word input unless forced to try something else. I am a lazy typist and even use the shortest form of a word that the computer will understand. EXAM MECH is much more likely more to appear on my Amstrad than EXAMINE MECHANISM.

There is also a little more to it than laziness. If I am enjoying an adventure I want to get on to the next problem. Typing short sharp commands keeps up the game's pace and I get a greater feeling of involvement.

I would certainly not adversely criticise the more complex parsers. Even if I do not use them to the full, they invariably have a greater understanding both in vocabulary and intent of a command. In a sense this comes back to how well written the game is and how easy it is to get along with any game regardless of complexity.

Are the latest and best the only games you would play or do you still enjoy those written around yesterday's systems? Write in and let me know what you think.

Tell me what you would like to see happen in the next 10 years of adventure game development. Can our computers sustain the rate of change we have seen in the last few years or are we nearly at the best we hope to see in the home?

It is easy to find something wrong with any game, but are you playing it or are you trying to take freedom of action beyond the limits of good sense?

Each game effectively defines the limits to which players can travel, both in space and actions. The illusion of freedom is what matters.

A well written game may have many climable trees but the player is persuaded against climbing them – not by being told he cannot, but by the trees having less emphasis within the text.

Think back to some of the best games you have played. What are they and why did you particularly like them? Conversely which were the worst ones? Let me know how you judge your games, I wonder if you ever agree with me . . .

Blood and bones

With their latest adventure, has CRL bitten off more it bargained for? Dracula is certainly a mouthful on several Counts! It is the first computer game to be given a Board of Censor's certificate – it deems it only suitable for persons of 15 years and over. The idea of the certificate was, I'm sure, only a gimmick to aid the game's advertising.

True, there is a certain amount of blood involved and a few rather gruesome descriptive passages, but nothing terribly frightening. We'll just have to hope that someone does not think that all computer games need this treatment.

Getting this type of certificate costs money and time. If it became the norm, it would undoubtedly mean more expensive software and delay production by a few weeks at least. Fortunately it does not look as though this is likely, but keep your fingers crossed just in case!

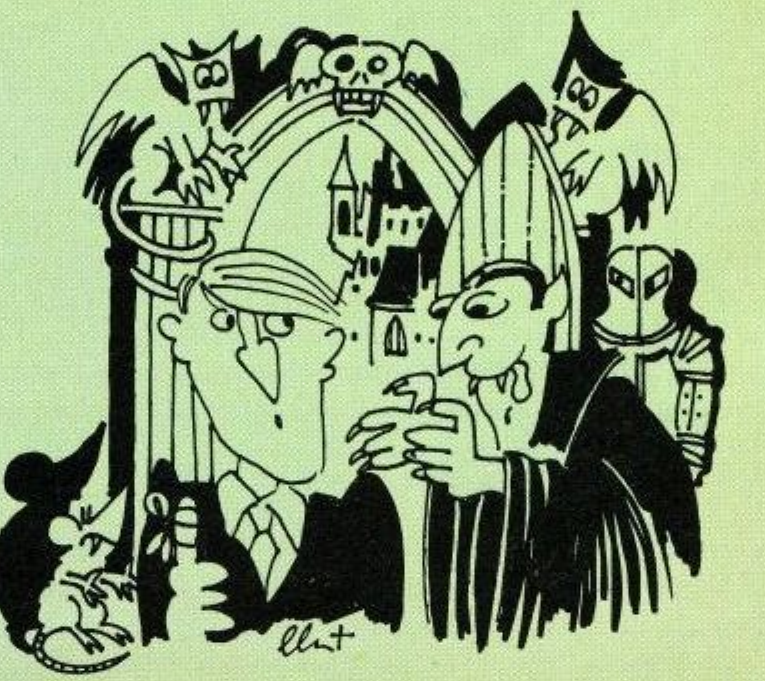
CRL's Dracula follows the present vogue of taking well known books and writing a computer adventure game around their plot. There are three parts and the package includes two cassette tapes that may be loaded into the CPC464, 664, or 6128.

The plot seems to follow Bram Stoker's original book fairly closely but reading the book is no real benefit in this game.

Your movements are mainly predestined, so you cannot roam around Transylvania at will. This does not mean that there are no vital decisions to be made, far from it, every few steps of the way there is some form of puzzle to be solved, and some are quite unpleasantly devious.

Each of the three parts may be played independently but as the story develops it is sensible to play them in the correct order. The first part, The First Night, is an introductory adventure dealing with John Harker's arrival and stay at the Golden Krone Hotel, his last stopover before he meets Count Dracula at Castle Dracula.

You play the part of John and sense that the locals are uneasy and that an evil presence pervades the







countryside. Having paid off the coachman and entered the hotel you must somehow survive the night to catch the next coach the following morning.

You are hungry and tired after your long journey. Satisfy your hunger in the hotel's restaurant and toddle off to your room for a good night's sleep.

What will happen during the night is dependent upon what you have eaten (and drunk) at dinner – rest assured, your dreams are not likely to be sweet!

There are very few locations in this section, so mapping is hardly necessary. It is more a question of different combinations of actions that will resolve your future. Each set of circumstances has its own problem or problems you will have to overcome.

Some fairly broad clues are thrown around but you will probably die several times before you hit on the right sequence of events.

Strangely enough this is not as frustrating as it may sound, the text produced is highly coloured and even if you make the wrong choices the atmosphere is maintained and you will probably enjoy the various strange happenings.

Having survived the night you will see the brave new day dawn, signalling the end of part one and the need to load the reverse side of the first tape. Part two, Arrival, covers the next few days, starting with the coach journey from the hotel.

Although you are expected at the castle, you still have to find a means of letting Count Dracula know that you have arrived. There are not many locations in this part either, but it is well worth mapping. This will not only ensure that you not forgotten how to map an adventure but also act as a double check that you have been to all the locations.

The Count has used your law offices to buy property in England. As you have all the paperwork with you, your health is no longer of importance – except to you. Beware of any cuts or scratches, the sight of blood will send your host into a feeding frenzy.

Having got into the castle and completed your dealings with Dracula, you must now try and escape. Several items are needed for you to eventually reach what was the castle's chapel and find freedom. On the way you will have been attacked by vampires and deadly rats, got lost in a labyrinth and climbed down a couple of secret passages.

Just the stuff to raise the blood pressure to such a satisfactory level, that no self respecting vampire could resist a quick snack!

In part three, The Hunt, you play the part of psychiatrist Doctor Seward, a close friend of John Harker. You own an asylum for the insane in the heart of England and receive disturbing news from abroad. Letters from John tell of his experiences and warn of undead beings let loose on your own green and pleasant countryside.

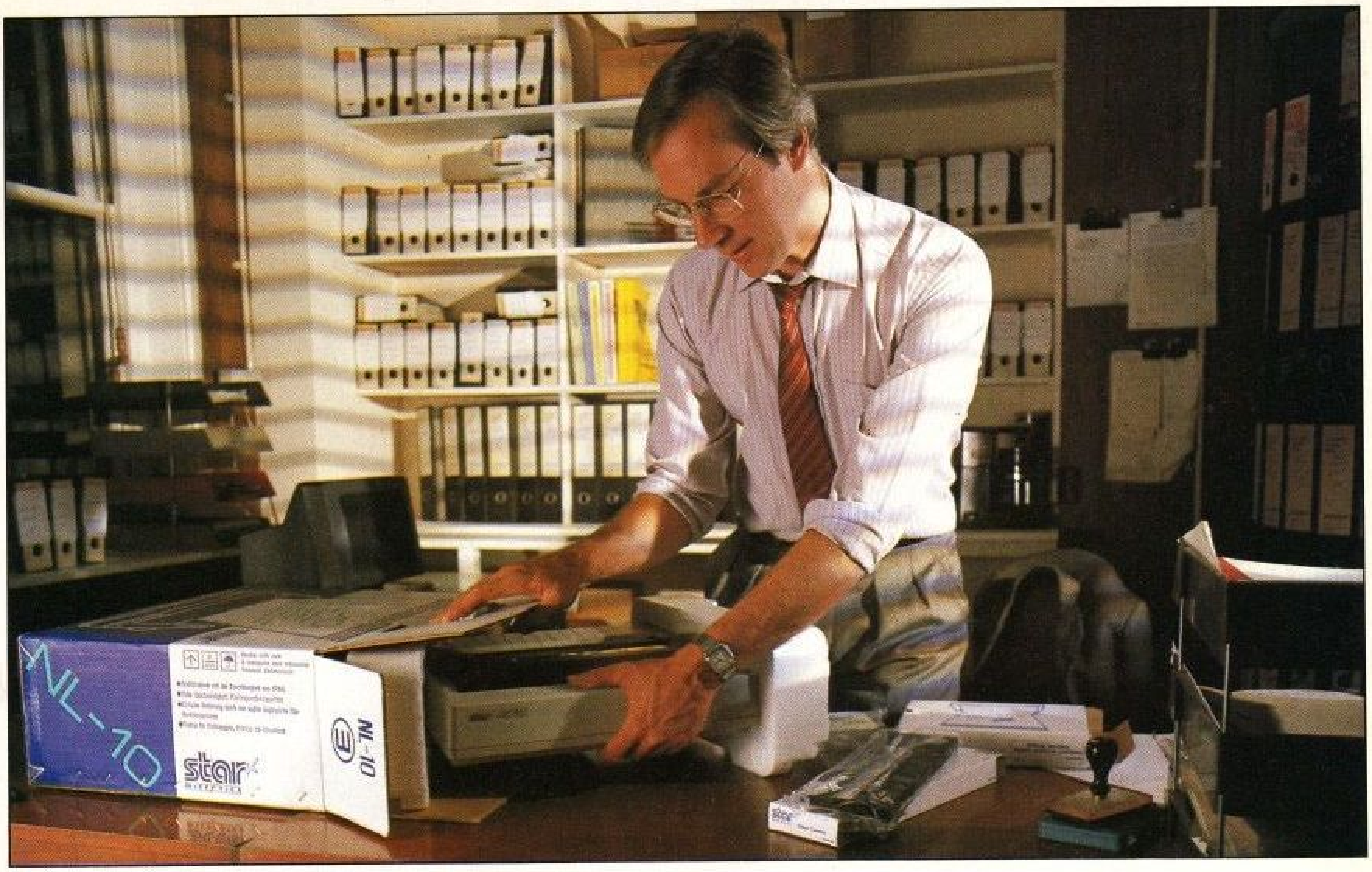
Calling for help from old friend and occultist Van Helsing, you must first track down an escaped inmate from the asylum who has come under Dracula's influence. Finally you will have to invade the Count's mansion and rid the world of this master of evil.

Although the first two parts do have some graphics, this is principally a text adventure. What graphics there are have been very well produced using digitised screen shots and are certainly worth looking out for. Rumour has it that they are all CRL staff members!

The parser recognises only simple verb/noun inputs and the vocabulary, while not extensive, is quite adequate. The number of objects is also limited, with everything having some purpose. As I said before, your progress has been very tightly defined but to win through you must keep your wits about you and be very observant.

One command is absolutely vital and must be used at every opportunity: LOOK AROUND. This implies that you are actively examining everything in sight and not just walking along without your mind fully in gear.

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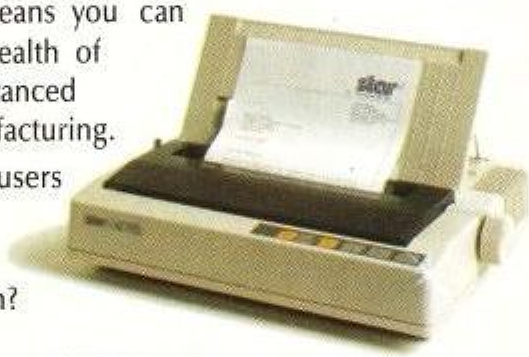
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if you use this command. Although the reasoning for this can be fully justified, it is still a little frustrating in practice.

EXAMINE can also help a great deal, but beware of the parser's limitations. EXAMINE PRINCESS (there is no princess) will get the response: "I see nothing special".

Ignoring a word that is not understood in this fashion is one way of masking a poor vocabulary but can catch the player out if you have typed in a word incorrectly.

There are many occasions where death is highly likely, so use the save option fairly often. Some vital objects and action will only materialise if you have already set in motion the reasons for their appearance.

Fortunately the number of locations is not great, so you can easily revisit places again – in the hope that something you need will now be there.

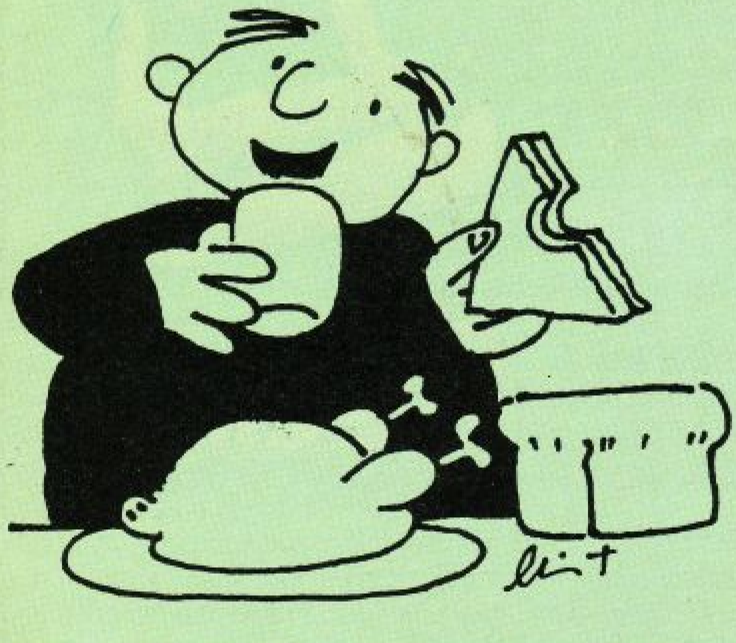
All of the puzzles are logical, but a number are not easy to spot the first time around. Mapping becomes more important the further you get.

There is a pseudo maze in part two where rats will kill you if you stay there too long. The maze found in part three is not difficult to map providing you keep your wits about you. You will almost certainly get completely lost unless you are fully prepared for it.

Altogether, Dracula poses some entertaining puzzles. Although the operating system is simple, I found it did not detract from the atmosphere or the urge to solve the next step towards the Count's eventual grisly end.

Lost and found

I have had many letters asking for help on Fantasia Diamond, which rarely gets a mention but is quite a



puzzler. G V White of Middlesex sent me the following hints:

Eat and drink plenty (although you can die from gluttony) as you need strength to overcome the pixies in the caves and the guardian of the cellar. They tend to imprison you on sight.

Initially you get out by obtaining a key from a friendly elf who is also imprisoned. The same key also opens the trapdoor up to the cellar.

On second and subsequent imprisonments, if you



have the key just wait. Providing your allies are not dead the cell door will open. The woodcutter can imprison you in the punishment cell. Again wait for release.

Boris has a gun. You can use it to shoot anyone but it has only one bullet. Preference is the woodcutter, but if you have used the gun he can still be killed by other means.

The characters are somewhat annoying. Save after each major event, its better than starting again. You can order some characters to follow you.This works sometimesa but not always. The violinistand conductor as well as Boris fall into this category.

To cross the river you need a boat and this is on the other side, reached via the caves and the passages in the fortress. However a pixie often makes an untimely appearance on the house side once you have rescued Boris,who has a tendency to recross, leaving you up a gum tree.

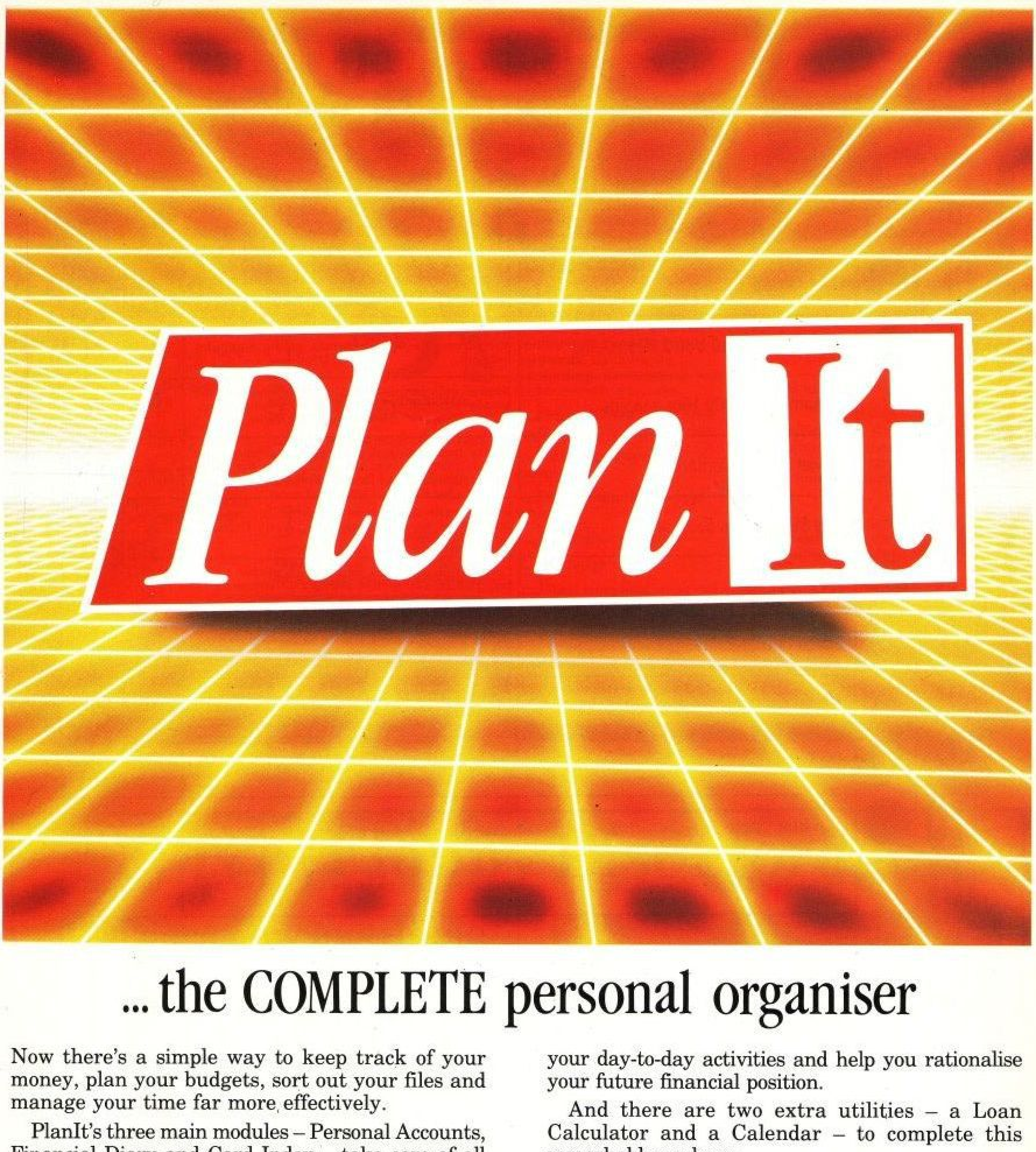
When you have Boris and the Fantasia Diamond, tell Boris to get the boat. He will cross and if you wait the boat will reappear without him. Get in, and on the other side push boat once you are out.

This has two functions, Boris cannot recross and the pixie does not appear and imprison you again. Also you still have a means of crossing the river!

If characters do not do as they are told it is because they are stubborn or that they cannot. However the Sentinel will do as he is told.

This could be a short game, but the characters can make it so much longer. It is vital for your peace of mind to save frequently.

I hope these hints help, Fantasia Diamond is a great little game but must be one of the most frustrating adventures around. ACU



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GALLUP SOFTWARE CHART

Position	Move	Title	Comment	Last month	Market strength
1	New entry	**Gauntlet** *US Gold*	Excellent conversion of the multi-player arcade smash. Impressive use of the sixteen colour mode and high speed animation. Deserves to be number one.	ne	100
2	Non-mover	**Computer Hits 10 Vol. 3** *Beau Jolly*	All your fave raves on one tape. A bargain compilation from the various artists of the computer industry.	2	74
3	Up	**Konami's Coin-Op Hits** *Imagine*	Save all your pennies for some day by avoiding the arcade and playing Green Beret, Ping-Pong, Hypersports, Mike and Yie Ar Kung-Fu at home.	11	70
4	Down	**Trivial Pursuit** *Domark*	Quirky questions and polished presentation give you as many endless hours of fun as the board game. Also available for the PC and PCW.	1	61
5	Down	**Five Star Games** *Beau-Jolly*	Good bargain compilation as seen on TV. Ideal first buy for the new computer user. Worth £9.95 for Spindizzy alone.	4	59
6	New entry	**Hit Pack** *Elite*	Compilation of games for the price of one, oldies but goldies, still with a plethora of compilations you can pick and choose.	ne	53
7	New entry	**Space Harrier** *Elite*	Ace Amstrad version of the Sega arcade buster. When the real thing costs up to 50p a throw this game looks super cheap but plays like the real thing.	ne	50
8	Up	**180** *Mastertronic*	Digital darts, a budget game based on the non-intoxicating bar-room skill.	9	40
9	New entry	**1942** *Elite*	Jap-bashing Double U Double U Two fighter game, a sort of historic Xevious with aircraft carriers.	ne	40
10	New entry	**Top Gun** *Ocean*	Two player dog fighting. High speed wire frame graphics – move over Tom Cruise.	ne	39
11	Down	**Five-a-Side Soccer** *Mastertronic*	Football games have been around since the days of Pong, now a cheapie for the CPC keeps the trend alive.	10	38
12	Down	**Booty** *Firebird*	A golden oldie on the Speccy but new to the Amstrad, Pirates and treasure platforms game.	6	36
13	Down	**Ikari Warriors** *Elite*	The first of Elite's really impressive arcade conversions, excellent sprites and a real battle feel.	8	34
14	Up	**Scooby Doo** *Elite*	Much delayed and a little disappointing. A dodgy ladders and platforms game with Scooby snacks and green ghosts. Nifty animation but lacks plot.	15	33
15	New entry	**Breakthru** *Data East/US Gold*	Possibly the worst game ever from US Gold. The collision detection in this game is so far off you get hit by bullets a character square away and can drive over rocks unharmed. Avoid.	ne	33
16	Up	**Aliens** *Electric Dreams*	Atmospheric action and strategy game. Reflects the fear generated by the stomach churning film. You don't need to have seen the flick to enjoy this one.	re	26
17	Down	**They Sold A Million (3)** *Hit Squad*	Fighter Pilot, Kung Fu Master, Rambo and Ghostbusters go to make up this compilation of past classics.	7	26
18	Down	**Bomb Scare** *Firebird*	3D Game in the Alien 8 mould, a bit of a bore unless you are a die-hard cartographer.	3	25
19	New entry	**Dragon's Lair** *Software Projects*	Atari laser disc classic, just as difficult if not quite as pretty on the Amstrad.	ne	25
20	New entry	**Footballer of the Year** *Gremlin Graphics*	Deep thought is needed in the football futures game from Gremlin. Has the added bonus of good graphics.	ne	25

Non-mover — Up — Down — New entry

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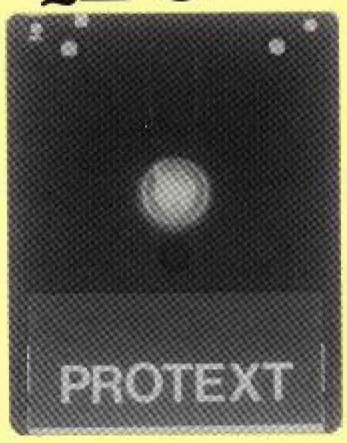
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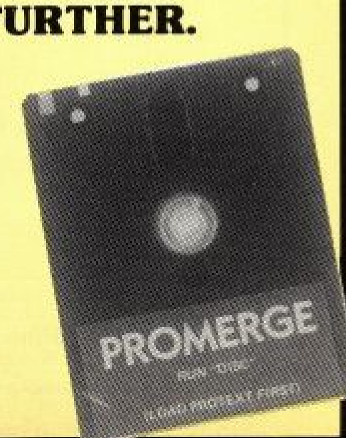
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PRESS

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Nemesis: Doing full justice to shoot-'em-ups

An in-depth appraisal by Simon Rockman

Konami is big, with new offices in Japan that cost $22m to build. So when the decision was taken to break into the home computer market the company certainly had the backing to do so.

In the past conversions of arcade games have been handled by software houses who buy the rights. So US Gold has Xevious licensed from Atari Coin-Op, Elite has Space Harrier and so on.

Konami used to licence its games to US Gold, but now uses a management company. In fact a new company was set up for Konami – Nemesis Management Consultants (NMC), run by Mike



Daniels and Farah Jones of Global software.

NMC finds programmers for projects and supervises conversions. It ensures that games are playable, sprites flicker-free and scrolling smooth.

The Amstrad conversion is the work of Cyclone program conversions, where Steve Lockfell and Dave Whitehorse have been beavering away with screen designers and assemblers to bring Nemesis to the Arnold.

Konami in Japan cannot be expected to know what is going to be a hit in the UK but the company does watch what is going on at home and as a result is most fussy about MSX versions.

Pride and a keen business sense ensure that NMC keeps up the standard on Amstrad, Commodore and Sinclair computers. Nemesis is the second Konami game which has made it to the Amstrad under the auspices of NMC, the first being Jailbreak.

Nemesis – the game

Scrolling shoot-em-up space games have lurked in video cabinets for nearly a decade. Not long after Space Invaders had shuffled sideways out of the arcades, games like Scramble and Defender flew in to replace them.

Nemesis looks as though it has been sired by these games. The controls are simpler, with only back, forward, up, down and of course fire to worry about: But there are many other features which show how games have progressed.

The old "extra life at 10,000" incentive scheme seems a bit mean when you discover what you can earn by playing Nemesis. By killing aliens you earn power capsules – which can be traded in for a variety of features.

Points make prizes

One power capsule can be traded for extra speed, which makes it easier to avoid bullets and aliens. Two capsules can be swapped for a set of missiles, while three will double your firepower, making it easier to zap the baddies and so earn yet more power capsules.

I usually wait until I've got four capsules and can afford a laser: Attack is the best form of defence and I feel a lot safer when wielding a weapon which will slice through the assaulting waves of aliens.

Be careful though. If you should select "double" after earning a laser you'll lose the more powerful weapon. The way to really double your firepower is described in the screen shots shown here as Option, or in the arcade version as Multiple.

This attaches a drone ship to your main craft which tags along behind, above or below you. This fires and launches missiles as you do – and when you die, it dies.

In fact death is a fate worse than that. Losing a life means that you lose all the power capsules and features you've fought for.

The most expensive spaceship peripheral is a forcefield. At six power capsules it is overpriced, since you can still be shot from behind and it runs out after a time.

Two few buttons

A problem constantly faced by programmers converting for home computers is the lack of controls. A keyboard is too unwieldy for fast gameplay so you are stuck with a joystick and one fire button.

Nemesis needs three fire buttons. One to select a feature, one to fire missiles and one to fire. If you watch experienced players at the arcade machine you'll see that they pound both the fire and missile buttons simultaneously.

The Amstrad version combines these functions, pressing just the joystick button fires all weapons. Selecting a feature is a little more tricky. Jailbreak used the spacebar, but that can be awkward.

In Nemesis you hold down the fire button to select the highlighted feature. You can end up wasting power capsules when your finger lingers on the button but with a little practice you get used to the system and it is quite workable.

The task

In the arcade version of Nemesis I've not been able to get much further than the beginning of the second level. That is with a lot of practice and a small fortune invested.

Thanks to a bit of help from NMC and some jiggery pokery, I was able to get a lot further. Still, my arcade experience stood me in good stead for level one.

The first alien assault does not fire, but rows of spinning blue baddies come at you five at a time and you need to shoot all of them.

The destruction of each formation of five aliens merits a jewel and by learn-

ing the pattern you can soon amass a formidable armament. As they appear the aliens line up, so a laser can slice through the lot with a single burst.

Mastering the wave of seven attacks is important, as this is where you can pick up the power capsules necessary in the big bad world which scrolls on from the right.

The pink marble-like rock encroaches from above and below, guarded by the first firing aliens you'll



encounter, swivelling gun emplacements which can be destroyed by cannon fire or missiles.

As a rule the more aliens attacking, the less they fire. This is not a speed restriction: Nemesis plays well, the Amstrad version being one of the fastest.

One kind of alien which looks like a butterfly emerges from a hangar. Killing off individuals is simple enough, but destroying the hangar takes a bit more effort.

One of the more challenging aliens looks like a Dalek on a spring, bouncing to and fro spitting bullets.

You know that you're nearing the end of the first sheet when a mid-air mountain appears and launches a fusillade of large rockets.

It is possible to destroy the rocket launchers but you'll die trying. The



best course of action is to duck under the mountain.

Two volcanos present the last barrier on the first level and they errupt with a vengeance. Missiles are very useful here but, as with the arcade version, just parking your ship as high up as possible is safe enough.

Once the storm has passed you are



confronted by a mothership. This appears between each sheet and is protected by a number of shields which have to be shot away before you can destroy the ship.

If you play the game a lot this will become a familiar sight, and practice will provide the skill needed in firing and moving to destroy the ship.

All this is crammed into the first of the eight levels. As you progress you'll find more hazards. The second sheet does not offer the three way scroll of the arcade version but it's just as nasty.

You have to shoot through rocks to carve your way past more gun emplacements. Later aliens include a foe which surrounds you and closes in, ships which fire three bullets before they scroll off and large Easter Island style heads.

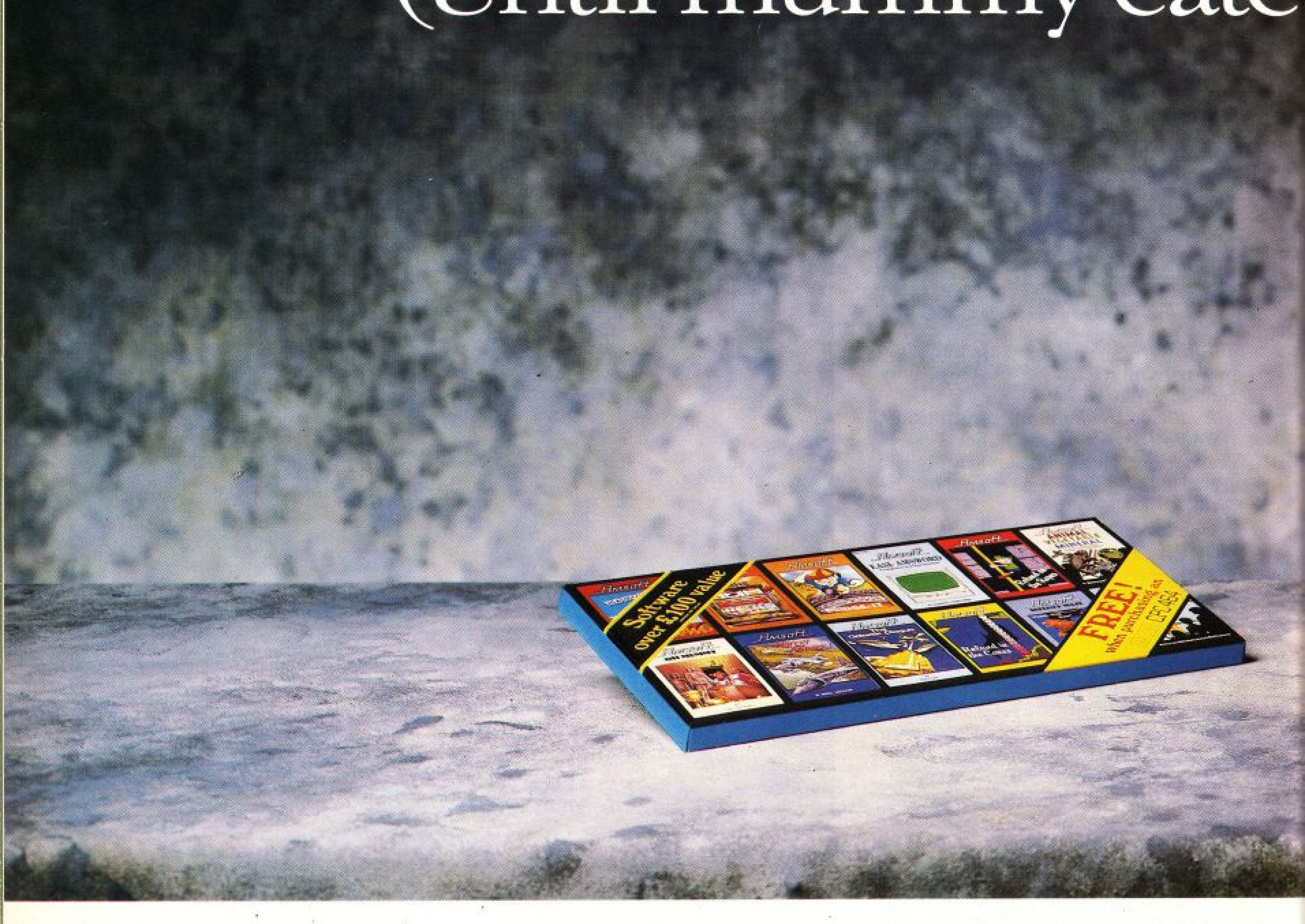
Level four is the same as level one – but inverted. All those patterns you've learnt now need to be adapted to master this but it provides a good chance to top up on power capsules.

Conclusion

Nemesis is a simple game in concept but has been improved upon to turn it into one of the best shoot-em-ups to appear on the Amstrad. It's new now but I'm sure that I'll still be playing it in a years time, an accolade which has been awarded to precious few games.

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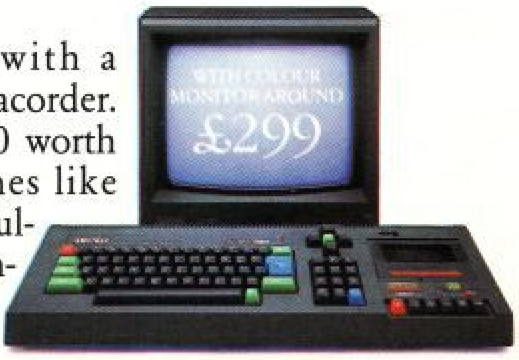
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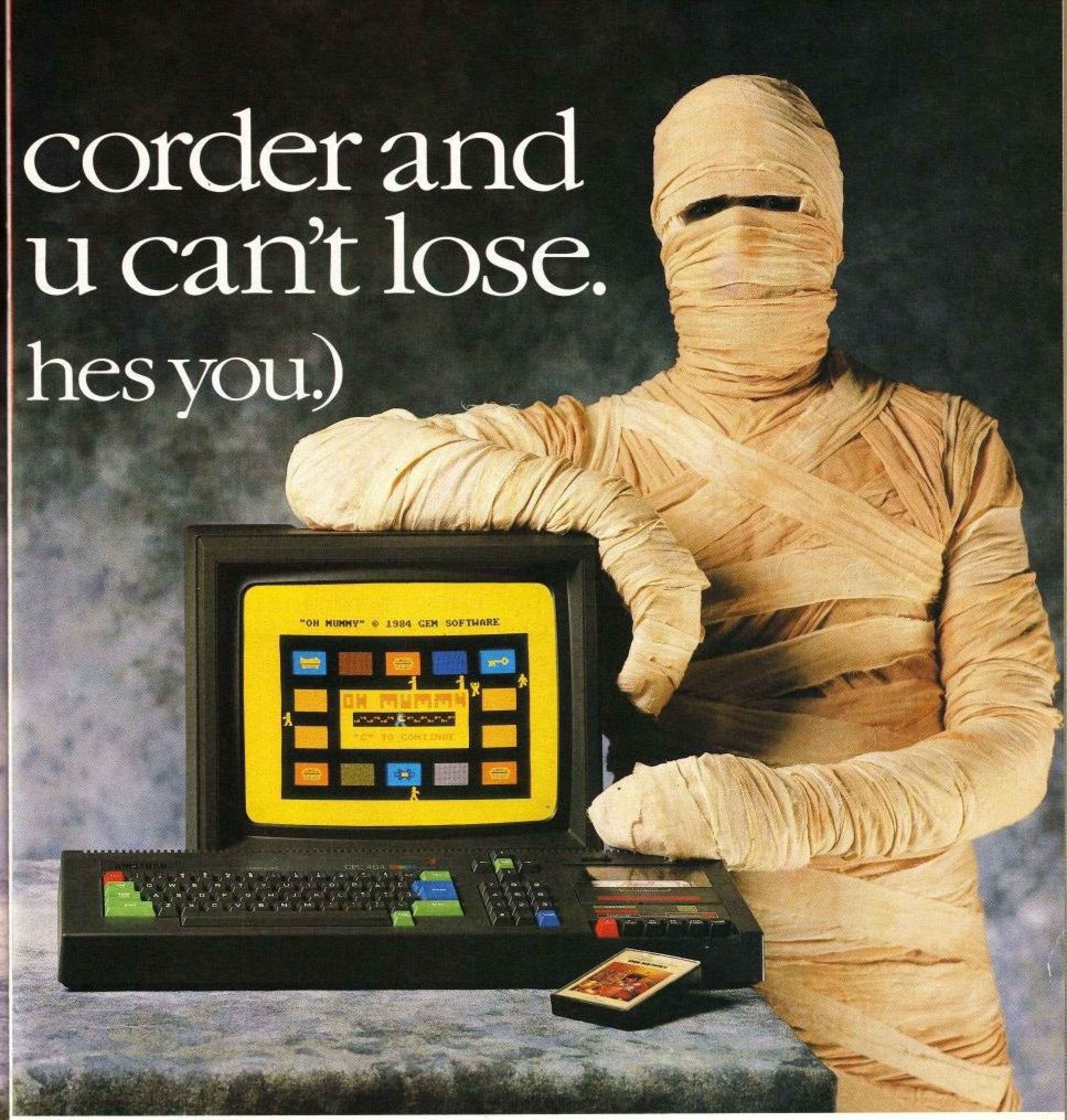




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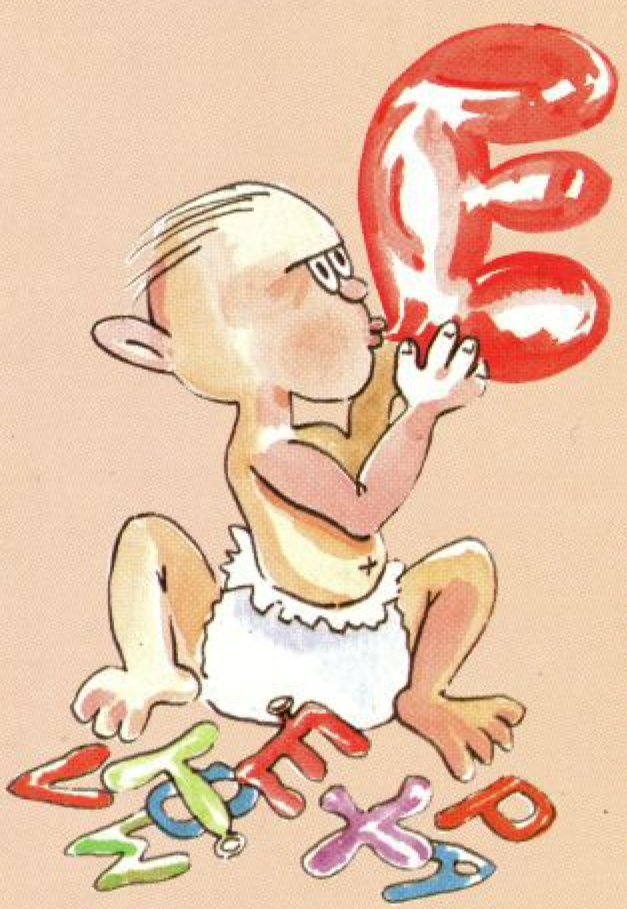
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Part 4 ASSEMBLY POINT



Getting around a byte more

You shift your left bit in; your left bit out; in, out, in, out and RRA it all about. In this month's machine code tutorial Peter Green looks at some simple applications for instructions that move the bits within a byte.

We've already seen areas in which Basic scores highly over machine code: For example, in the provision of the higher mathematical functions using floating point arithmetic.

But this month we look at a type of operation where Basic is left for dead – shifting or rotating the bits within a byte. Basic has no keywords that can do this job and programs written using the commands that are available are clumsy and slow.

At the machine code level though, there are an almost bewildering number of op codes for bit shifting. Bits can be shifted to the left or right, arithmetically or logically, or rotated in either direction in a path that does or does not include the carry flag.

They can be in any 8 bit register or in memory pointed to by the HL, IX or IY registers; and some specialist ones affect the flags register in a different way to all the rest. That's quite a lot to digest, so I'll be keeping it simple but useful this month.

The two routines provided in Listings I and II use bit rotation to manipulate the character set.

Listing I is a program that rotates a single character 90 degrees anticlockwise so that text can be printed sideways up the screen. There's a modified version of our familiar *print* subroutine that generates the upwards printing.

The whole routine is interesting rather than useful, though – as the screen is only 25 characters high, you can't fit much on a "line", and in Mode 2 the characters are short and fat instead of tall and thin and are thus virtually unreadable.

Readers might find it useful for labelling the Y axis on Mode 1 graphs, in conjunction with a screen dump for a hard copy printout.

Listing II, however, is a handy little piece of code. It lets you print text using characters up to three times normal width, or three times normal height and any combination thereof.

It's simple to use, as you just pass a pointer to a string to it in HL (again, the same as *print*), plus a number in the C register which specifies the horizontal and vertical scaling factors. This number is range-checked so you can't do anything too stupid!

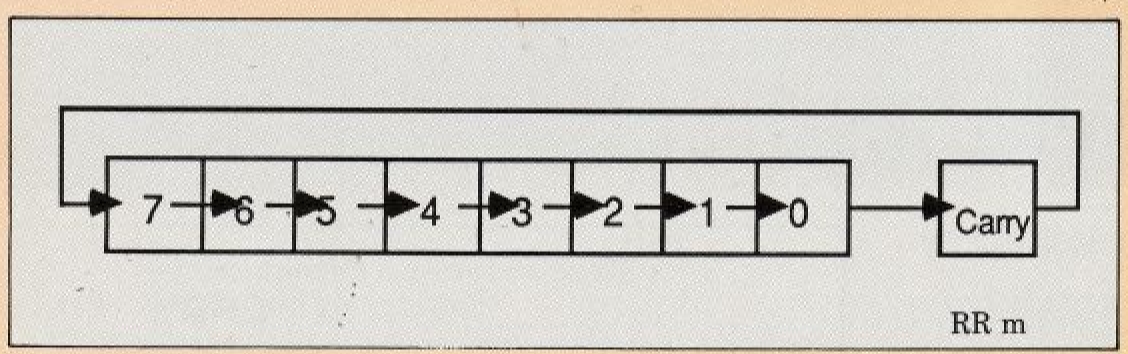


Figure I

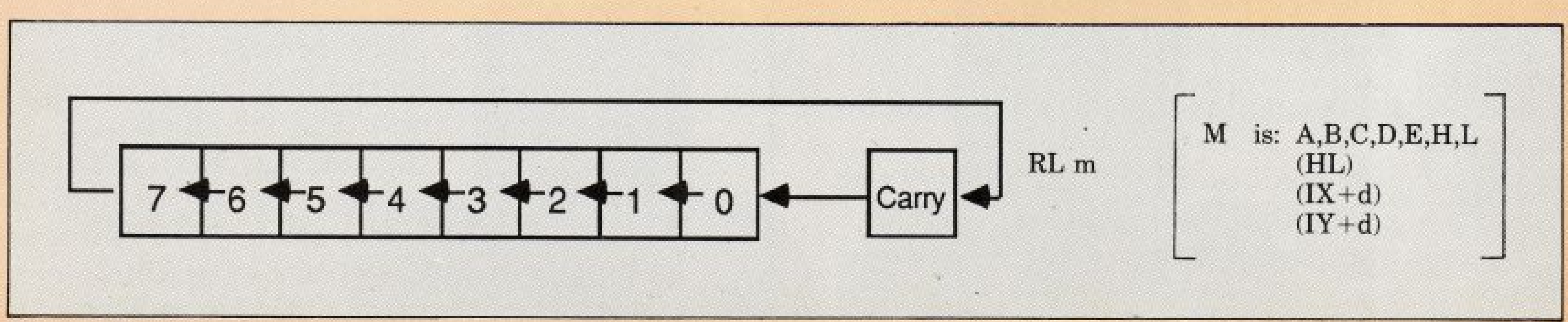


Figure II

Go for a spin

Both of this month's programs rely on the RR and RL (Rotate Right and Rotate Left) instructions, whose actions are illustrated in Figures I and II.

For rotate right, each bit of an 8 bit byte is shifted into its righthand neighbour – bit 7 into 6, bit 6 into 5 and so on.

The bit which "drops off the end" from bit 0 goes to the carry bit in the flags (F) register, and the previous value of the carry goes to bit 7 of the operand.

The operand may be one of the 8 bit registers on the Z80 (A, B, C, D, E, H or L) or a byte in memory pointed to by any of the 16 bit registers HL,IX+d or IY+d.

Rotate left works exactly the same, except in the opposite direction. Both affect the three other testable flags, Zero, Sign and Parity: In particular Z is set if the rotation leaves the operand as zero.

Figure III shows the process we need to perform to spin a character 90 degrees. A text character is based on an 8 by 8 grid of pixels, stored as eight bytes of data, each bit representing a set or reset pixel. This is illustrated in the first box in Figure III (three sample rows are numbered).

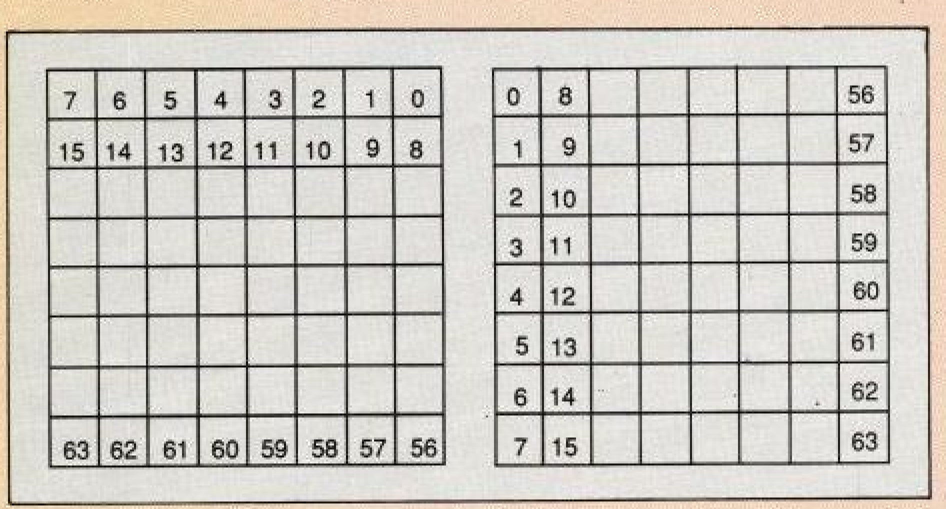


Figure III

The second box in Figure III shows how we want to reorder the pixels, while Figure IV shows the method used. Follow it through in conjunction with Listing I, starting at the label .rotate.

After saving HL, which is going to get corrupted, the firmware call txt_ get_matrix is used to find out where in memory is the data for the character we're twisting. The call takes the Ascii code of the character in A and returns with HL pointing to the first of the eight data bytes.

This is moved to DE and the call made a second time to find where character 246 is. We'll build up the new, rotated character there and simply print CHR$(246) to get the result on-screen. B is set to 8 to count through the eight rows of data.

Now DE is pointing to the first data byte, which we can get into the A register with a LD instruction. HL is pointing to the first byte of character 246.

We're going to shift the eight bits out of A one at a time, but don't we need another counter for this? No – we know that the Z flag will be set when all there are no "1" bits (on pixels) left in A.

We can't rely on the contents of A – if

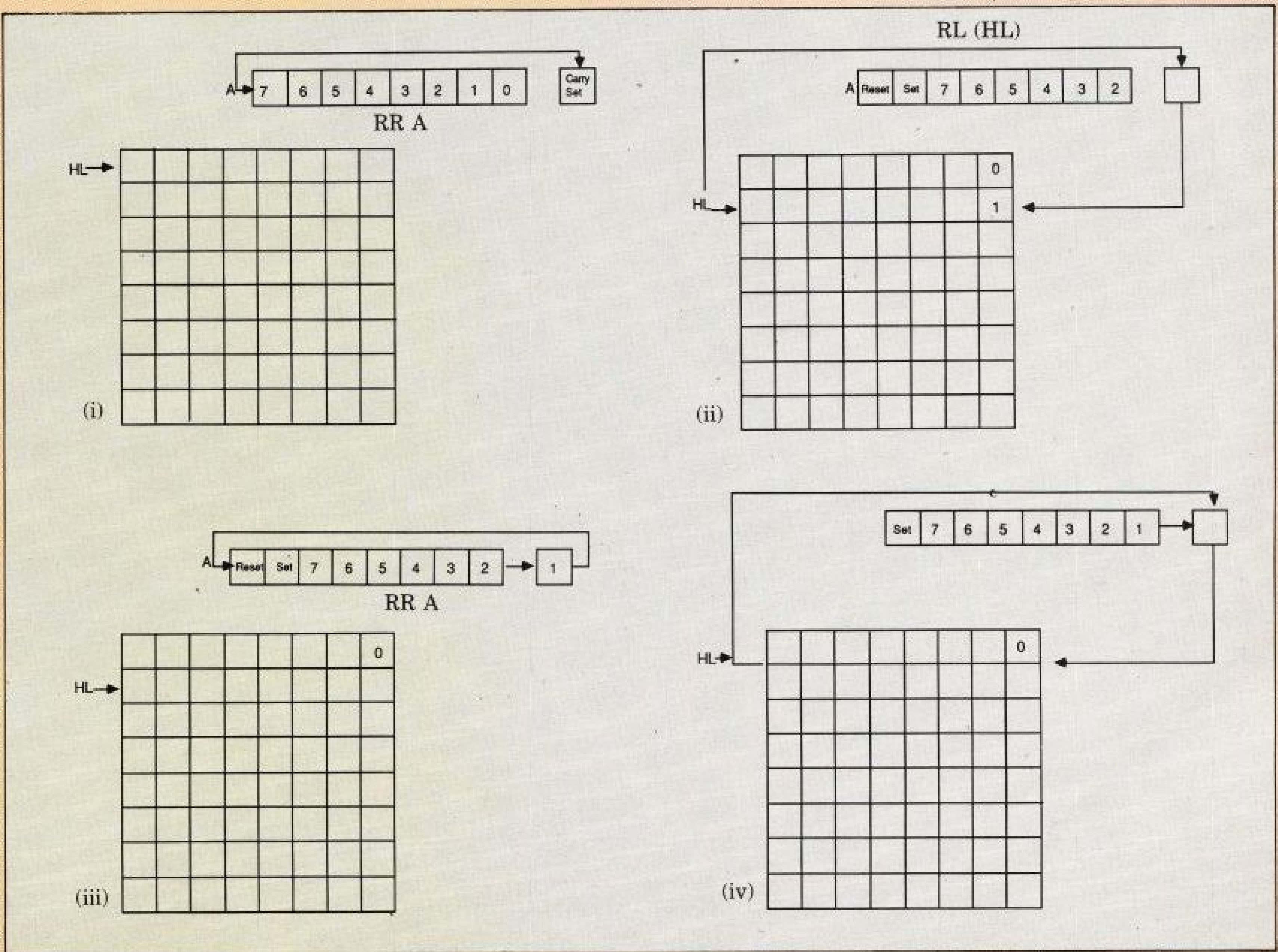


Figure IV

you were printing a space, the loop would terminate on the first bit, not the eighth. So set the carry to one before the first RR A, and to zero thereafter, using an OR A instruction which always resets the carry.

This way A can only hit zero when the set marker bit has travelled all the way through A from bit 7 to bit 0 and dropped back into the carry. Cunning, what?

Figure IV shows the first few steps in the process – you can continue to sketch the steps out on paper if you aren't convinced what's happening.

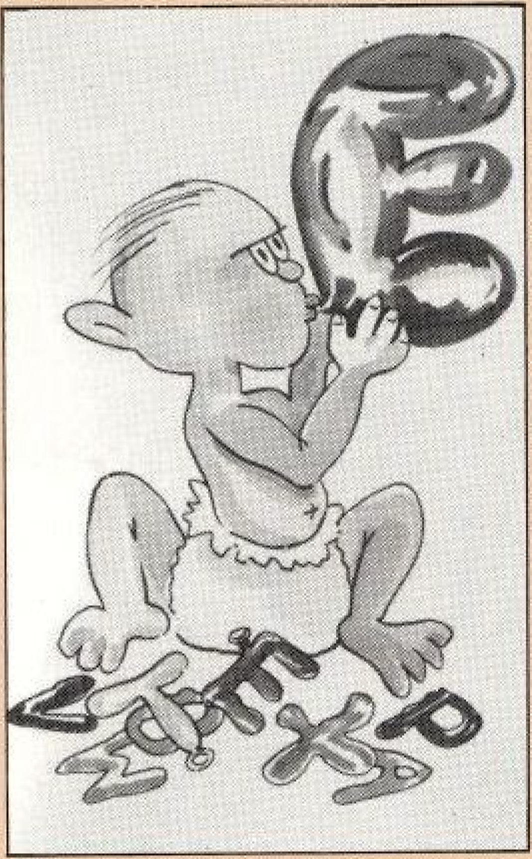
Effectively, the program takes each of the original eight rows one at a time, and shoves the eight bits from that row into the righthand end of eight different rows in character 246. Eventually, all the pixels have trickled along to their final positions.

Other points to note are that I use txt_set_m_table at the start of the program to clear any user-defined characters, then force all the Ascii characters into ram.

If they were left in rom you would have to enable the lower rom to get at them and that means making sure that the subroutine in Listing I isn't located under the lower rom (&0000-&4000).

The printing routine itself looks just like our old friend *print* (itself required as a subroutine in this listing), except that *txt_output* is replaced with our new routine *rotate*.

Finally, printing the rotated character 246 leaves the text cursor one character to the right of its old position, as usual. For printing up the screen we want it left above the old position, so a



cursor-left/cursor-up sequence is needed after each character to achieve this.

Little and large

The subroutine *scaleprint* in Listing II is again based on *print*, but this time we need not only the address of the string in HL, but a number in C to tell the routine what the scaling factors are for the height and width.

You have an (independent) choice of times 1, 2 or 3 scaling for the height and width, stored in the high and low nibbles of the C register as shown in Figure V. So for double-height/treble-width characters, C is &23, while for treble-height/single-width it would be &31.

Remember that these numbers must be hexadecimal; making C 23 or 31 decimal will not give the expected result! The routine will work incorrectly if C is not in the correct range so *scaleprint* first makes sure each nibble is at least 1 and not greater than 3.

By the time the program gets to label .scale2, C is correct, and here the code once again looks like *print*, this time with *scalechr* instead of *txt_output*. Scalechr works – in principle – just like *rotate*.

Bytes are fetched from the character table, manipulated into their new patterns in a set of UDGs, then the UDGs are printed as a block to produce the transformed character correctly on screen.

Since we're allowing for text characters up to 3 by 3 times larger than normal, we need 9 user-defined characters to hold the biggest scaled character.

Characters 247 to 255 are reserved for this purpose, and regardless of what the scaling factors are, are considered to be a 3 by 3 block laid out as in Figure VI (for the single and double scaling we just ignore part of the square).

It's easy to see how to scale a character in its height – for double height, say, just use every row twice instead of once. The section of code between labels .hght1 and .scalestr does the job, but notice the bottom rows of the character are done first, working back to the top of the character.

Think about it: You want double height, so you copy row 0 into row 1. You've just destroyed the data in row 1 which should have gone into rows 2 and 3, and so on down the whole character.

The width is a little trickier to handle. Each bit which is set or reset in a row must be replaced with two or three adjacent bits, each also set or reset. We need a variation on the RR and RL instructions, called RRC and RLC – Rotate Right Circular and Rotate Left Circular.

Their operation is shown in Figure VII. The spare "hole" left at the end of the operand after the bit rotation is not

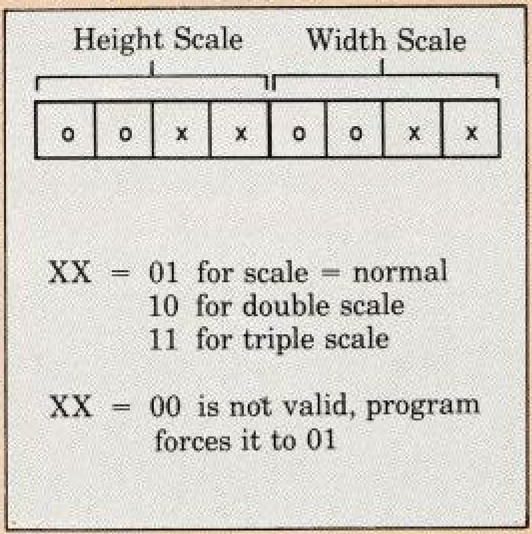


Figure V

Char 247	Char 250	Char 253
Char 248	Char 251	Char 254
Char 249	Char 252	Char 255

Figure VI

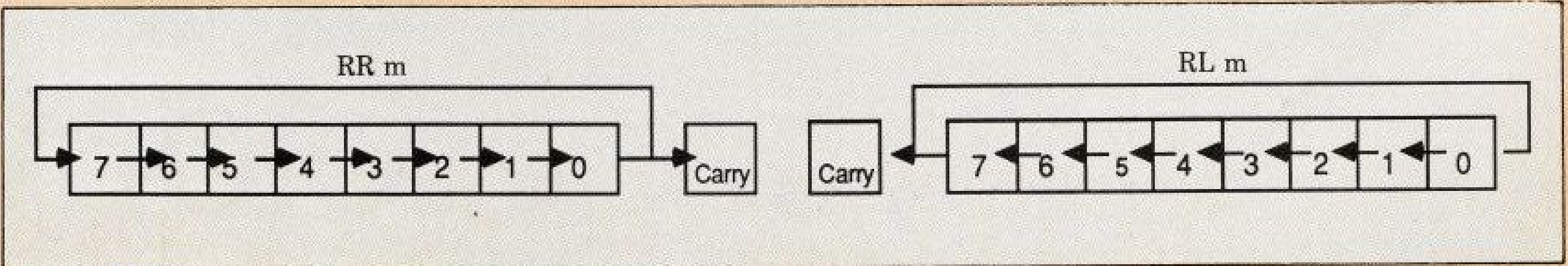
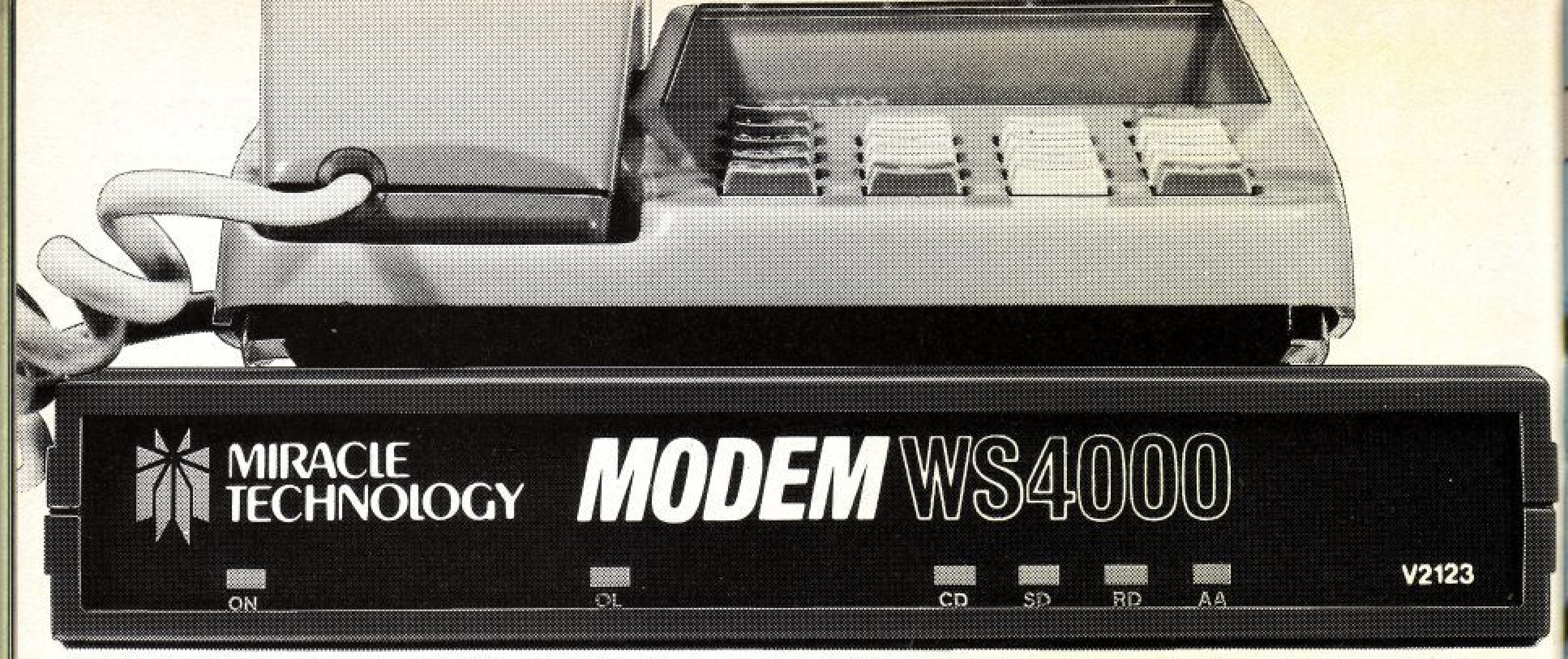


Figure VII



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filled with the contents of the carry flag; it takes the bit that drops out of the other end of the byte.

The carry still holds a copy of this bit, as before, but its value has no effect on the bits in the operand. They just follow each other round like an endless belt.

This easily solves our problem. First DE is pointed to the data for the Ascii character to be scaled, and HL, IX and IY are set up to point the three adjacent row bytes in our "big character block".

A data byte is loaded into A and RRCA used to get its least significant bit into the carry flag. This bit is shunted into the lefthand end of the three-byte row, the shift rippling down the line through the carry.

At this point the contents of the carry are whatever dropped out the end of (IY+0) – we don't know what. But the RLCA puts A back the way it was when we started and also copies the same bit as before into the carry!

So another round of RR instructions puts the second of our adjacent bits into the big-character row. Another RRCA moves the next most significant bit of A into position ready to be doubled, and also puts a third copy of the least significant bit into the carry to be used if we're scaling by three.

The explanation sounds much more confusing than it really is. Try sketching the steps on paper to make things clearer to yourself.

The final extension to the routine is that instead of one control character string, we need 9, one for each of the possible scalings. The strings are all different lengths, so a table of their start addresses is kept (scaletbl) and a bit of simple arithmetic performed on the scale factor in C to generate an offset into the table.

The address of the required string is extracted and the big character printed. Notice how easy it is to generate this table of addresses using an assembler. All we need to do is think up a different label for each string and let the assembler do all the hard work of figuring out the addresses.

```
org &8000

.txt_output      EQU &BB5A
.txt_get_matrix  EQU &BBA5
.txt_set_m_table EQU &BBAB

LD DE,256
CALL txt_set_m_table ;Switch off any existing UDGs
LD DE,32             ;Use machine code equivalent
LD HL,table          ;of SYMBOL AFTER to make sure
CALL txt_set_m_table ;ASCII characters are in RAM

LD HL,message        ;point to the message

.rotprint
LD A,(HL)            ;Identical routine to our old
INC HL               ;string printing program (as
OR A                 ;used below) but with txt_output
RET Z                ;replaced with the character
CALL rotate          ;rotating subroutine
JR rotprint

.rotate
PUSH HL              ;Save pointer to rotprint string
CALL txt_get_matrix  ;Point to pattern for char in RAM
EX DE,HL             ;put pointer in DE
LD A,246             ;We'll put the rotated data into
CALL txt_get_matrix  ;character 246, so point to that too
LD B,8               ;Set counter to no. of rows in char

.rot1
PUSH HL              ;Save pointer to first byte in char 246
LD A,(DE)            ;Get a byte from character to be rotated
INC DE               ;Point to next byte
SCF                  ;Set the carry flag (use instead of a counter)

.rot2
RR A                 ;Rotate a bit into the carry
JR Z,rot3            ;and quit when A goes zero, as all bits out

RL (HL)              ;Else rotate the bit into char 246 first byte
INC HL               ;Point to next byte
OR A                 ;Make sure carry flag is reset
JR rot2              ;and loop back

.rot3
POP HL               ;Restore pointer to first byte in char 246
DJNZ rot1            ;and loop back until done all eight rows

LD HL,strup          ;Then use faithful ol' print routine to output
CALL print           ;the rotated character, a backspace and cursor-up
POP HL               ;Restore the rotprint string pointer
RET                  ;and quit

.print               ;'Nuff said!
LD A,(HL)
INC HL
OR A
RET Z
CALL txt_output
JR print


.strup
BYTE 246,8,11,0      ;character 246, backspace, cursor-up, null byte

.message
TEXT "Print up the screen.",0

.table EQU $         ;as good a place to put the character set as any!
```

Listing I

```
org &8000

.km_wait_char    EQU &BB06
.txt_output      EQU &BB5A
.txt_get_matrix  EQU &BBA5
.txt_set_matrix  EQU &BBA8
.txt_set_m_table EQU &BBAB
.scr_set_mode    EQU &BC0E


LD DE,256
CALL txt_set_m_table ;Switch off any existing UDGs
LD DE,32             ;Use machine code equivalent
LD HL,table          ;of SYMBOL AFTER to make sure
CALL txt_set_m_table ;ASCII characters are in RAM

LD A,1
CALL scr_set_mode    ;Set Mode 1 for demo
LD C,&31             ;Set C register to height/width
LD HL,message        ;Point to the message
CALL scaleprint      ;Print it
LD C,&23             ;and repeat for a range of scales
LD HL,message
CALL scaleprint
LD C,&21
LD HL,message
CALL scaleprint
LD C,&12
LD HL,message
CALL scaleprint
LD C,&33
LD HL,message
CALL scaleprint

JP km_wait_char      ;then wait for a keypress and quit


.scaleprint
LD A,C               ;Get scale factor
AND &33              ;Ensure each scale factor in range 0-3
LD C,A               ;and put it back
AND &30              ;Also check that scale for height isn't zero
JR NZ,scale1
SET 4,C              ;and make it 1 if it is

.scale1
LD A,C               ;Then get scale back into A register
AND 3                ;and do the same thing for the width scale
JR NZ,scale2
```

Listing II

Listing II

```
SET 0,C

.scale2
LD A,(HL)           ;OK, scale is now a valid number. Get the character
INC HL              ;and print it using an identical routine to our old
OR A                ;string printing program (as
RET Z               ;used below) but with txt_output
CALL scalechr       ;replaced with the character
JR scale2           ;scaling subroutine


.scalechr
PUSH HL             ;Save pointer to the string we're printing
CALL txt_get_matrix ;Point HL to pattern for character in RAM
LD A,247            ;Transfer the "normal" data into character 247
PUSH BC
CALL txt_set_matrix ;using a firmware call that corrupts all GP registers,
POP BC              ;which is why we keep C safe on the stack

LD A,247
CALL txt_get_matrix ;Point HL to data for character 247
LD B,0              ;Make sure B is zero for a routine later

BIT 1,C             ;Is width to be doubled or tripled?
JR Z,hght1          ;If not, skip over next part of program

PUSH HL             ;Else move HL to IX and IY
POP IX
PUSH HL
POP IY
LD DE,24            ;DE = length of three characters
ADD IX,DE           ;Make IX point to first row in char 250
ADD IY,DE
ADD IY,DE           ;Make IY point to first row in char 253

LD B,8              ;Set outer loop counter to no. of rows in char
PUSH HL             ;Save pointer to first row in char 247

.wdth1
PUSH BC             ;Save outer loop counter
LD B,8              ;Set inner loop counter to no. of bits in a row

.wdth2
LD A,(HL)           ;Get a byte from character to be scaled

.wdth3
RRCA                ;Rotate current pixel bit into the carry
RR (HL)             ;Shuffle it along the rows pointed to by the HL,
RR (IX+0)           ;IX and
RR (IY+0)           ;IY registers
RLCA                ;Now A is back the way it was, and carry is still
RR (HL)             ;the current pixel bit
RR (IX+0)           ;so shuffle it along the rows as before, giving a
RR (IY+0)           ;doubled-up pair of bits
RRCA                ;Rotate A one last time, bringing next pixel to bottom
BIT 0,C             ;Test C to find if width is scaled 2 or 3 times
JR Z,wdth4          ;If 2, skip next section (throwing away carry value)
RR (HL)             ;Else shuffle once again, giving a triplet of identical
RR (IX+0)           ;pixel values in the character rows.
RR (IY+0)

.wdth4
DJNZ wdth3          ;Loop round 8 times to double or triple each pixel

INC HL              ;Increment all the row pointers
INC IX
INC IY
POP BC              ;Get the outer loop (row) counter
DJNZ wdth1          ;and loop 8 times

POP HL              ;restore pointer to char 247

.hght1
BIT 5,C             ;Is height to be doubled or tripled?
JR Z,scalestr       ;If not, skip next section
LD B,3              ;Else set outer counter to 3 (columns)


.hght2
PUSH BC             ;Save outer counter
LD DE,8             ;Length of one character
LD B,E              ;Copy 8 to B as inner loop counter
ADD HL,DE           ;Point HL to start of character 248
PUSH HL             ;Save this value
ADD HL,DE           ;Point HL to start of character 249
BIT 4,C             ;Check for double or triple height, and if
JR Z,hght3          ;it's triple, then add 8 yet agian to point
ADD HL,DE           ;HL to the start of character 250

.hght3
POP DE              ;Get the pointer to the start of char 248 into DE

.hght4
DEC DE              ;Point DE to previous byte (in char 247)
LD A,(DE)           ;Get the contents of that byte into A
DEC HL              ;Point HL to previous byte
LD (HL),A           ;Save data byte there
DEC HL              ;Do it again
LD (HL),A
BIT 4,C             ;OK, double height done. Check C to find if triple is set
JR Z,hght5          ;Skip if not
DEC HL              ;Else store the byte a third time
LD (HL),A

.hght5
DJNZ hght4          ;Loop 8 times, for eight rows in a "normal" character

LD DE,24            ;Right, first column (of possible 3) done. Add 24 bytes
ADD HL,DE           ;(3 characters) to HL, so it points to the start of the
POP BC              ;next column. Get the column counter off the stack, and
DJNZ hght2          ;loop three times

.scalestr
LD A,C              ;OK, we've scaled width and height. Get the scale factor
PUSH BC             ;and also save it
RRA                 ;Shift it right one place,
RRA                 ;and again
OR C                ;Combine old and new values
AND &F              ;Throw away unwanted top nibble, keep bottom nibble
ADD A,A             ;Double it (could also use RLCA here!)
LD C,A              ;Put result in C. B is always zero here.
LD HL,scaletbl-10   ;Put table base in HL
ADD HL,BC           ;and add the offset in BC so HL points to required entry
POP BC              ;Restore scale factor
LD A,(HL)           ;Get low byte of table entry in A
INC HL              ;Point to high byte
LD H,(HL)           ;Get high byte of entry in H (HL is now some odd value)
LD L,A              ;But move low byte from A to L, so now HL = table entry
CALL print          ;Print the string pointed to by HL,
POP HL              ;Restore message string pointer
RET                 ;Return from subroutine


.print              ;That good ol' routine!
LD A,(HL)
INC HL
OR A
RET Z
CALL txt_output
JR print

.scaletbl           ;table of addresses of strings that print out
WORD str11          ;the big character patterns
WORD str12
WORD str13
WORD 0
WORD str21
WORD str22
WORD str23
WORD 0
WORD str31
WORD str32
WORD str33

.str11              ;and the strings themselves
BYTE 247,0

.str12
BYTE 247,250,0

.str13
BYTE 247,250,253,0

.str21
BYTE 247,10,8,248,11,0

.str22
BYTE 247,250,10,8,8,248,251,11,0

.str23
BYTE 247,250,253,10,8,8,8,248,251,254,11,0

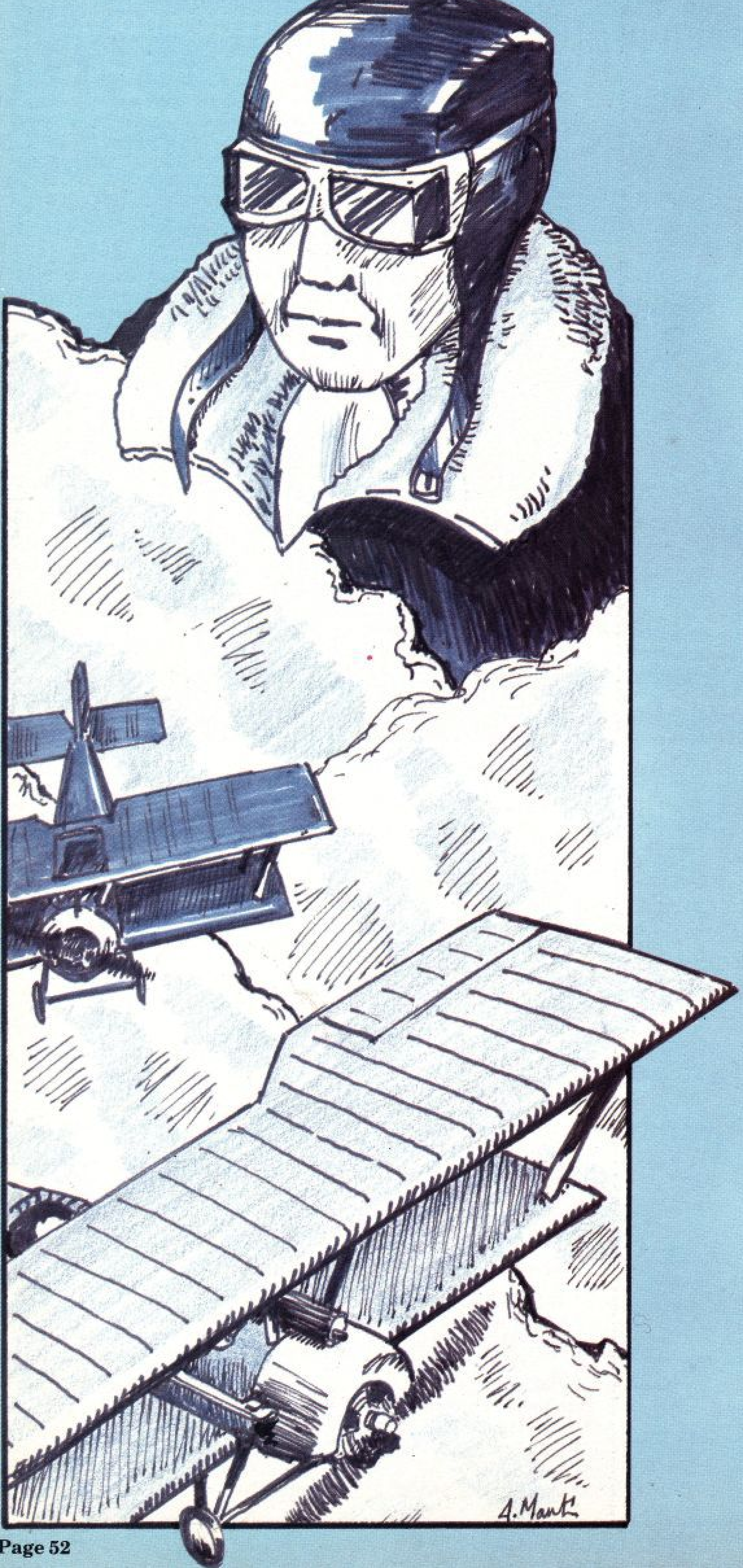
.str31
BYTE 247,10,8,248,10,8,249,11,11,0

.str32
BYTE 247,250,10,8,8,248,251,10,8,8,249,252,11,11,0

.str33
BYTE 247,250,253,10,8,8,8,248,251,254,10,8,8,8,249,252,255,11,11,0


.message
TEXT "ABC ",0
.table EQU $        ;character set goes here where we can get at it
```

ACU





Dogfight involves piloting a WWI fighter against the evil Blue Baron. You must manoeuvre your plane behind him to get a clear shot. Five hits from your machine gun is enough to destroy the aircraft. Ten Blue Barons must be shot down to win the game.

The game is for one or two players. If two, the second player takes over control of the Baron's plane. Joysticks are used, but this can easily be changed by altering the key numbers in line 90 to numbers shown in your manual.

Basic and machine code are used, the Basic part loading a binary file containing sprite routines and data. This is then Called to "log on" the RSXs, Sprite and Blank. These extensions are then used in the main Basic program to draw and erase the aircraft. RSXs are preceded by a " symbol. This is put into the program by '.

Typing in

Type in Listing I, the Basic part of the game, and save it on to a tape or disc. Reset and type in Listing II, the Basic program that creates the binary file. Save Listing II on to a separate tape in case of accidents.

Run Listing II. If all is ok, the program will want to save the binary file. If you are using tape, save the file on the same tape as the Basic part of the game so that it loads when the game is run. When the game is running correctly Listing II can be deleted.

Make sure you do not type ls instead of 1s in variable names. And save your work before attempting to run the program.

The variable *diff*, in line 100, controls the difficulty of the game against the computer. A value of 15 is challenging and difficult, 25 is much easier, 5 is impossible.

How it works

Lines 10 to 130 set up the program. First all variables are set to integers and then a break interrupt is set up



Be a World War I flying ace with Alex Martin's simulation

that will put the computer into Mode 2 when Esc is pressed.

Line 40 is the first important line. It sets up three functions which allow the coordinates of the planes to be incremented and decremented without worrying that the new coordinate is off the screen.

Line 50 sets up the screen with a graphics window. This stops the score from being shot down. Line 60 loads and calls the machine code if it hasn't been loaded already. 70, 80 and 90 set up the ink colours and the keynumbers.

In line 100 *diff*, as already mentioned, is the level of difficulty and d is the distance between each dot when the guns are fired. 110 to 130 sets up the sound envelopes and moves to the routine at 1170.

Lines 1170 to 1220 deal with the two-player option. First the various messages are printed and then a loop between 1190 and 1220 is entered. Only when either 1 or 2 has been pressed can the loop be exited.

The routine sets up the variable *twoplayer* to be either true (1) or false (0) and this is used to control the program later on. After leaving the routine, control is passed to line 1070.

Line 1070 clears the screen and prints the score by calling the routine at 1130. It then enters the main loop at 170. Lines 170 and 180 set up the variables ready for starting a dogfight. The x and y coordinates of the planes are set up and the damage is zeroed.

Line 190 makes engine drone noises according to how far up the screen the planes are. At line 200 the *twoplayer* variable is tested and, if true, the second of the two input routines is called and control skips to 240.

The lines that are skipped control the computer's plane. A direction is chosen at random. The variable *r1* controls how long the plane flies in that direction. When *r1* reaches zero the routine at 460 is called.

In 460 an initial random value between 1 and 5 is given to *r1*. Line 470 tests whether the computer's plane is behind the player's. If it is, a random direction for y is generated and the difficulty value is added to *r1*.

Control then passes to 490 and 500 where the x direction is set to home in on the player's plane and the flag to shoot at the player is set to true.

If the computers plane is in front of the player's, the computer's plane is put in reverse and a random sideways direction is generated. The routine then returns to the main loop.

Lines 220 and 230 use the directions set up for the computer's action. Short routines at 360 to 430 alter the coordinates. 220 changes the coordinates for left and right, while 230 changes them for up and down.

With the new coordinates set up, the main loop continues by calling the first input routine at 530.

The routine at 530 tests each key in turn. The variables *up, down, left, right and fire* contain key numbers for the directions of the joystick. If a switch is closed the relevant variable is altered and then control returns to the main loop.

Line 250 compares the old coordinates of the player's (or player one's) plane with its new coordinates. If they are different the plane must have moved.

If the plane has moved the old image is erased with Blank and the new drawn with Sprite. Even if the plane has not moved it is drawn again, as the other plane may have moved across it and erased part of it.

Line 260 does the same for the second plane. Line 270 then updates the old coordinates ready for next time around the loop.

Lines 280 to 300 concern shooting. The three variables *shoot, shoot2* and *shoot3* are used as flags. *Shoot* calls the routine at 790. This is the player's shot.

A loop of five iterations tests five points in front of the plane. The results of each test are added to the variable '*a*'. The shots are then plotted on the screen and then unplotted.

The sound command at 800 is slightly special as it uses a negative value for time. This makes the machine gun rattle out 10 rounds. At 830, if the computer's plane has been hit, a noise is made and the number of hits is incremented.

If there have been six hits the routine skips to 930, otherwise it returns to the main loop.

930 is the explosion routine for the Baron's plane. The score is incremented. 960 sets the endgame flag and jumps to 1130 to update the score and return to the main loop.

Meanwhile back in the main loop *shoot2* is set for a computer controlled shot. If the Blue Baron's plane is close to player one's the routine for the computer's shot is called.

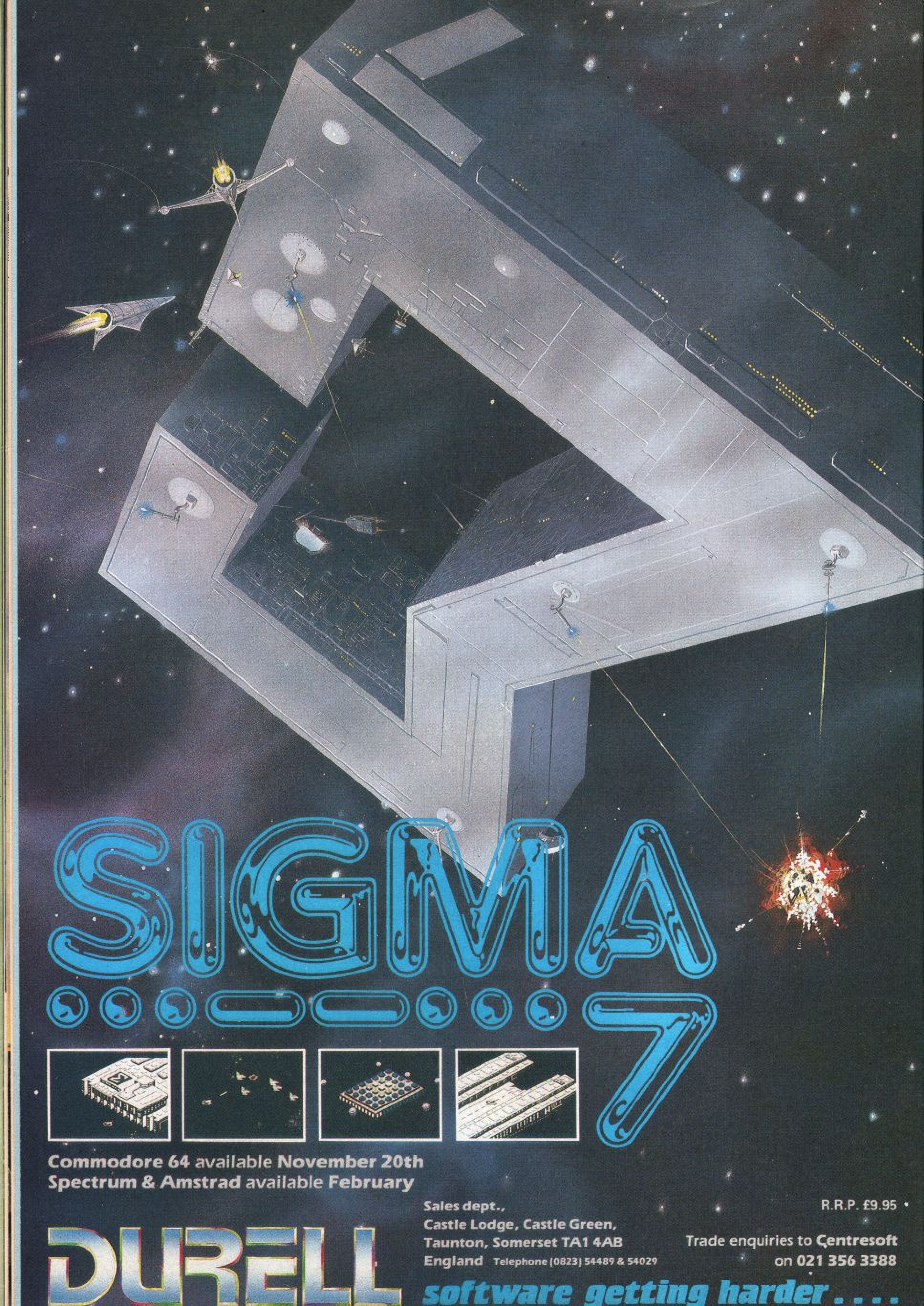
This is very similar to the player's shooting routine but sets the computer's action if a hit is made. If the plane is destroyed the explosion routine at 980 is entered.

For a two player game *shoot3* is set when the second player's gun must be fired. When a plane is shot down the endgame flag is set and line 310 jumps to the end of game routine.

The routine at 1050 checks if either of the scores are 10 and prints a message if they are.

If someone has won the routine skips to 1090, which waits for a key press and then resets the game. If nobody has yet won the screen is cleared and the next round is started at 170.

If the game hasn't ended in line 310 the program loops back to 190 where everything happens again.


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Dogfight Listing I

```
5 t$="1234567890ABCDEF"
6 MEMORY &7FFF:addr=&8000
10 FOR ln=1000 TO 3050 STEP 10
20 READ a$,sum
30 a$=UPPER$(a$)
40 FOR n=1 TO 16
50 IF INSTR(t$,MID$(a$,n,1))=0 THEN 300
60 NEXT
65 tot=0
70 FOR p=1 TO 15 STEP 2
80 v=VAL("&"+MID$(a$,p,2)):tot=tot+v
90 NEXT
100 IF tot<>sum THEN n=20:PRINT"CHECKSUM
    ":GOTO 300:ELSE vsum=vsum+tot
110 FOR p=1 TO 15 STEP 2
120 v=VAL("&"+MID$(a$,p,2)):POKE addr,v:
    addr=addr+1
130 NEXT:NEXT ln
140 IF vsum=57891 AND tot=128 THEN SAVE"
    scode",b,&8000,&678:STOP
150 PRINT"Wrong number of lines"
300 PRINT"ERROR ";ln;TAB(14);a$;",";sum
310 PRINT TAB(13+n);"↑"
320 STOP
1000  DATA 211D80010980C3D1, 732
1010  DATA BC1180C32280C367, 988
1020  DATA 805350524954C542, 793
1030  DATA 4C414ECB00000000, 422
1040  DATA 0000FE03C0AF3221, 707
1050  DATA 80CD5880EBDD7E04, 1135
1060  DATA 3C01C00021788009, 543
1070  DATA 3D20FCEB0E18C5E5, 1044
1080  DATA 06083A21804F1AB9, 523
1090  DATA 280177231310F7E1, 702
1100  DATA CD29BCC10D20E7C9, 1104
1110  DATA DD5603DD6601DD5E, 949
1120  DATA 02DD6E00C31DBCFE, 999
1130  DATA 02C03E0132218 0CD, 673
1140  DATA 5880117880C33C80, 864
1150  DATA 0000000000000000, 0
1160  DATA 0000000000000000, 0
1170  DATA 0000000000000000, 0
1180  DATA 0000000000000000, 0
1190  DATA 0000000000000000, 0
1200  DATA 0000000000000000, 0
1210  DATA 0000000000000000, 0
1220  DATA 0000000000000000, 0
1230  DATA 0000000000000000, 0
1240  DATA 0000000000000000, 0
1250  DATA 0000000000000000, 0
1260  DATA 0000000000000000, 0
1270  DATA 0000000000000000, 0
1280  DATA 0000000000000000, 0
1290  DATA 0000000000000000, 0
1300  DATA 0000000000000000, 0
1310  DATA 0000000000000000, 0
1320  DATA 0000000000000000, 0
1330  DATA 0000000000000000, 0
1340  DATA 0000000000000000, 0
1350  DATA 0000000000000000, 0
1360  DATA 0000000000000000, 0
1370  DATA 0000000000000000, 0
1380  DATA 0000000000000000, 0
1390  DATA 0000000000000000, 0
1400  DATA 00000C08044D0000, 101
1410  DATA 00008E0C0C4D0000, 243
1420  DATA 0000450C8E8A0000, 361
1430  DATA 0000008ECF000000, 349
1440  DATA 00000048A000000, 142
1450  DATA 00000048A000000, 142
1460  DATA 00000048A000000, 142
1470  DATA 00000048A000000, 142
1480  DATA 00000048A000000, 142
1490  DATA 0000000C8E000000, 154
1500  DATA 0000000C8E000000, 154
1510  DATA 0000000C4D000000, 89
1520  DATA 0000004CCD000000, 281
1530  DATA 0000004CCD000000, 281
1540  DATA 0C0C084CCD040C0C, 341
1550  DATA 0C0C0C0C0C0C0C4D, 161
1560  DATA 0C0C0C0C0C0C0C4D, 161
1570  DATA 0C0C0C0C0C0C0C4D, 161
1580  DATA 0C0C0C0C0C0C0C4D, 161
1590  DATA 8E0C0C0C0C0C0C4D, 291
1600  DATA 45CFCFCFCFCFCF8A, 1449
1610  DATA 0000000408000000, 12
1620  DATA 0000040CCF080000, 231
1630  DATA 0000000000000000, 0
1640  DATA 0000F0A050B00000, 656
1650  DATA 000070F0F0B00000, 768
1660  DATA 000010F070200000, 400
1670  DATA 0000007030000000, 160
1680  DATA 0000005020000000, 112
1690  DATA 0000005020000000, 112
1700  DATA 0000005020000000, 112
1710  DATA 0000005020000000, 112
1720  DATA 0000005020000000, 112
1730  DATA 000000F070000000, 352
1740  DATA 000000F070000000, 352
1750  DATA 000000F0B0000000, 416
1760  DATA 000000B53A000000, 239
1770  DATA 000000B53A000000, 239
1780  DATA F0F0A0B53A50F0F0, 1439
1790  DATA F0F0F0F0F0F0F0B0, 1856
1800  DATA F0F0F0F0F0F0F0B0, 1856
1810  DATA F0F0F0F0F0F0F0B0, 1856
1820  DATA F0F0F0F0F0F0F0B0, 1856
1830  DATA 70F0F0F0F0F0F0B0, 1728
1840  DATA 1030303030303020, 336
1850  DATA 00000050A0000000, 240
1860  DATA 000050F030A00000, 528
1870  DATA 000000003C031600, 85
1880  DATA 0000000000032800, 43
1890  DATA 0000000000161400, 42
1900  DATA 0000000000032800, 43
1910  DATA 0000000000030000, 3
1920  DATA 0000000000162800, 62
1930  DATA 0000000014162800, 82
1940  DATA 000000003C0000, 60
1950  DATA 00000000013C0000, 61
1960  DATA 0000000001160000, 23
1970  DATA 0000000014020000, 22
1980  DATA 0000000000160000, 22
1990  DATA 0000000000030000, 3
2000  DATA 0000000000160000, 22
2010  DATA 0000000000810000, 129
2020  DATA 0000000000800000, 128
2030  DATA 0000000000000000, 0
2040  DATA 0000000000000000, 0
2050  DATA 0000000000000000, 0
2060  DATA 0000000000000000, 0
2070  DATA 0000000000000000, 0
2080  DATA 0000000000000000, 0
2090  DATA 0000000000000000, 0
2100  DATA 0000000000000000, 0
2110  DATA 0000000000000000, 0
2120  DATA 0000000000000000, 0
2130  DATA 0000000000000000, 0
2140  DATA 0000000000000000, 0
2150  DATA 0000000000000000, 0
2160  DATA 0000000000000000, 0
2170  DATA 0000000000000000, 0
2180  DATA 0000000000000000, 0
2190  DATA 0000004000000000, 64
2200  DATA 0000C00000800000, 320
2210  DATA 0000018081000000, 258
2220  DATA 0000008040000000, 192
2230  DATA 0000008102000000, 131
2240  DATA 0000400102800000, 195
2250  DATA 0000000281000000, 131
2260  DATA 0000400000800000, 192
2270  DATA 0000004000000000, 64
2280  DATA 0000000000000000, 0
2290  DATA 0000000000000000, 0
2300  DATA 0000000000000000, 0
2310  DATA 0000000000000000, 0
2320  DATA 0000000000000000, 0
2330  DATA 0000000000000000, 0
2340  DATA 0000000000000000, 0
2350  DATA 0000000000000000, 0
2360  DATA 0000000000000000, 0
2370  DATA 0000000000000000, 0
2380  DATA 0000000000000000, 0
2390  DATA 0000000000000000, 0
2400  DATA 0000000000000000, 0
2410  DATA 0000000000000000, 0
2420  DATA 0000004000000000, 64
2430  DATA 0040404000400000, 256
2440  DATA 0000420002000000, 68
2450  DATA 0000408081000000, 321
2460  DATA 0000008142000000, 195
2470  DATA 0000000303020000, 8
2480  DATA 0000010303400000, 71
2490  DATA 0000400381000000, 196
2500  DATA 0000000100000000, 1
2510  DATA 0000800000400000, 192
2520  DATA 0000004000000000, 64
2530  DATA 0000000000000000, 0
2540  DATA 0000000000000000, 0
2550  DATA 0000000000000000, 0
2560  DATA 0000000000000000, 0
2570  DATA 0000000000000000, 0
2580  DATA 0000000000000000, 0
2590  DATA 0000000000000000, 0
2600  DATA 0000000000000000, 0
2610  DATA 0000000000000000, 0
2620  DATA 0000000000000000, 0
2630  DATA 0000000000000000, 0
2640  DATA 0000008000000000, 128
2650  DATA 004080C0C0000000, 576
2660  DATA 004080C0C0C00000, 768
2670  DATA 0040C0C003C00000, 643
2680  DATA 40C042C003C08000, 837
2690  DATA 40C0030303420000, 331
2700  DATA 00C0818103428000, 647
2710  DATA 00C0810303C0C000, 711
2720  DATA 0000810303C00000, 327
2730  DATA 0080810303428000, 457
2740  DATA 00C00342C0800000, 581
2750  DATA 00810242C0C00000, 581
2760  DATA 40C000C000800000, 576
2770  DATA 4080008000000000, 320
```

```
2780  DATA 0000000000000000, 0
2790  DATA 0000000000000000, 0
2800  DATA 0000000000000000, 0
2810  DATA 0000000000000000, 0
2820  DATA 0000000000000000, 0
2830  DATA 0000008000000000, 128
2840  DATA 0000008000400000, 192
2850  DATA 408040C0004000C0, 704
2860  DATA 40C040C080C040C0, 1088
2870  DATA 40C0C042C0C0C080, 1218
2880  DATA 0081C003C0C0C000, 900
2890  DATA 0081030342814200, 396
2900  DATA 00C0030303034200, 270
2910  DATA C0C0030303034200, 462
2920  DATA C003030303038000, 335
2930  DATA 40C0030303038000, 396
```

```
2940  DATA 00C003030342C0C0, 651
2950  DATA C003030303034280, 401
2960  DATA C0C0030303038000, 524
2970  DATA 00C0030303038000, 332
2980  DATA 0081030303034280, 335
2990  DATA 00814242C0814280, 776
3000  DATA 4081C042C0C0C080, 1155
3010  DATA 40C0C042C000C000, 898
3020  DATA C0C040C00000C000, 832
3030  DATA C00040C000000000, 448
3040  DATA C000008000000000, 320
3050  DATA 0000008000000000, 128
3060  DATA 0000000000000000, 0
```

Dogfight Listing II

```
10 DEFINT a-z:DEFREAL t
20 ON BREAK GOSUB 30:GOTO 40
30 MODE 2:STOP
40 DEF FNinx(x)=MIN(x+4,144):DEF FNdec(v
   )=MAX(v-4,0):DEF FNiny(y)=MIN(y+4,167
   )
50 MODE 0:ORIGIN 0,0,0,640,0,382
60 IF PEEK(&8000)=0 THEN MEMORY &7FFF:LO
   AD "!scode",&8000:CALL &8000
70 FOR n=0 TO 15:READ i:INK n,i:NEXT
80 DATA 0,24,9,3,14,10,13,16,26,12,6,18,
   23,3,1,0
90 up=72:down=73:left=74:right=75:fire=7
   6:up1=48:down1=49:left1=50:right1=51:
   fire1=52
100 d=20:diff=20
110 ENV 1,=9,3000:ENV 2,1,10,1,1,-10,1:E
   NT-1,4,6,2
```

```
120 ENT -2,=100,1,=200,1,=140,2,=650,2:E
   NV 3,50,0,50
130 GOTO 1170
140 '
150 '
160 'main loop
170 p1x=10:p1y=10:p2x=120:p2y=10:r1=5
180 p1hits=0:p2hits=0:endgame=0
190 SOUND 130,1000+p1y,50,5,3:SOUND 132,
   900+p2y,50,5,3:a=0:a2=0
200 IF twoplayer THEN 660
210 r1=r1-2:IF r1<=0 THEN GOSUB 460
220 ON dirx GOSUB 360,370,380
230 ON diry GOSUB 410,420,430
240 GOSUB 530
```

```
250 IF p1ox=p1x AND p1oy=p1y THEN |SPRIT
   E,0,p1x,p1y ELSE |BLANK,p1ox,p1oy:|S
   PRITE,0,p1x,p1y
260 IF p2ox=p2x AND p2oy=p2y THEN |SPRIT
   E,1,p2x,p2y ELSE |BLANK,p2ox,p2oy:|S
   PRITE,1,p2x,p2y
270 p1ox=p1x:p1oy=p1y:p2ox=p2x:p2oy=p2y
280 IF shoot THEN GOSUB 790
290 IF shoot2 AND p1x<p2x+16 AND p1x>p2x
   -16 AND p2y<p1y-8 THEN GOSUB 860
300 IF shoot3 THEN GOSUB 860
310 IF endgame THEN 1040
320 '
330 GOTO 190
340 '
350 '
360 p2x=FNdec(p2x):RETURN
370 p2x=FNinx(p2x):RETURN
```

```
380 RETURN
390 '
400 '
410 p2y=FNdec(p2y):RETURN
420 p2y=FNiny(p2y):RETURN
430 RETURN
440 '
450 '
460 r1=INT(RND*5)+1:shoot2=0
470 IF p1y-24<p2y THEN diry=1 ELSE diry=
   INT(RND*2)+2:r1=r1+diff:GOTO 490
480 dirx=INT(RND*3)+1:RETURN
490 IF p1x<p2x THEN dirx=1 ELSE dirx=2
500 shoot2=-1:RETURN
510 '
520 '
530 IF INKEY(up) THEN 550
```

```
540 p1y=FNiny(p1y)
550 IF INKEY(down) THEN 570
560 p1y=FNdec(p1y)
570 IF INKEY(left)THEN 590
580 p1x=FNdec(p1x)
590 IF INKEY(right)THEN 610
600 p1x=FNinx(p1x)
610 IF INKEY(fire)THEN shoot=0:RETURN
620 shoot=1:RETURN
630 RETURN
640 '
650 '
660 IF INKEY(up1) THEN 680
670 p2y=FNiny(p2y)
```

```
680 IF INKEY(down1) THEN 700
690 p2y=FNdec(p2y)
700 IF INKEY(left1)THEN 720
710 p2x=FNdec(p2x)
720 IF INKEY(right1)THEN 740
730 p2x=FNinx(p2x)
740 IF INKEY(fire1)THEN shoot3=0:GOTO 24
   0
750 shoot3=1:GOTO 240
760 '
770 '
780 '
790 MOVE p1x*4+32,p1y*2+48:FOR n=1 TO 5:
   a=a+TESTR(0,d):NEXT
800 SOUND 129,1000,-10,3,2,0,24
```

```
810 MOVE p1x*4+32,p1y*2+48:FOR n=1 TO 5:
   PLOTR 0,d,1:NEXT
820 MOVE p1x*4+32,p1y*2+48:FOR n=1 TO 5:
   PLOTR 0,d,0:NEXT
830 IF a>0 THEN p1hits=p1hits+1:SOUND 12
   9,13,50,0,1,1:IF p1hits>5 THEN 930
840 RETURN
850 '
860 MOVE p2x*4+32,p2y*2+48:FOR n=1 TO 5:
   a2=a2+TESTR(0,d):NEXT
870 SOUND 129,2000,-10,3,2,0,20
```

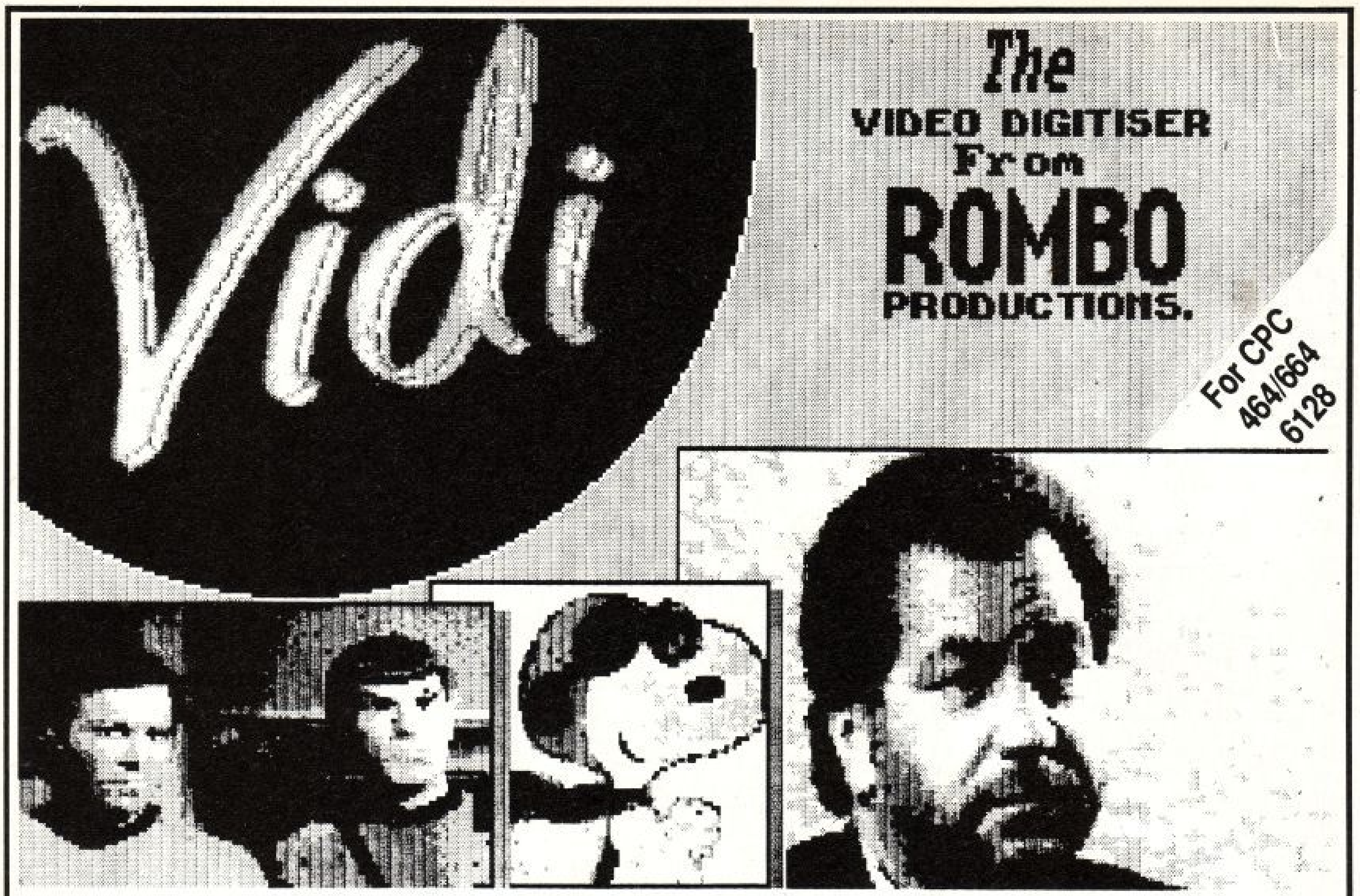
```
880 MOVE p2x*4+32,p2y*2+48:FOR n=1 TO 5:
   PLOTR 0,d,1:NEXT
890 MOVE p2x*4+32,p2y*2+48:FOR n=1 TO 5:
   PLOTR 0,d,0:NEXT
900 IF a2>0 THEN p2hits=p2hits+1:dirx=3:
   diry=3:r1=5:SOUND 129,20,50,0,1,1:IF
   p2hits>5 THEN 980
910 RETURN
920 '
930 |SPRITE,2,p2x,p2y:FOR n=p2y TO 0 STE
   P-8:|SPRITE,2,p2x,n:NEXT
940 SOUND 4,0,0,0,1,0,20
950 FOR n=3 TO 6:|SPRITE,n,p2x,p2y:FOR i
   =1 TO 50:NEXT i,n:p1score=p1score+1
960 FOR n=1 TO 20:|SPRITE,(n MOD 2)+5,p2
```

```
   x,p2y:NEXT n:endgame=-1:GOTO 1130
970 '
980 |SPRITE,2,p1x,p1y:FOR n=p1y TO 0 STE
   P-8:|SPRITE,2,p1x,n:NEXT
990 SOUND 4,0,0,0,1,0,20
1000 FOR n=3 TO 6:|SPRITE,n,p1x,p1y:FOR
   i=1 TO 50:NEXT i,n:p2score=p2score+
   1
1010 FOR n=1 TO 20:|SPRITE,(n MOD 2)+5,p
   1x,p1y:NEXT n:endgame=-1:GOTO 1130
1020 '
1030 '
1040 '
1050 IF p1score>9 THEN LOCATE 7,5:PRINT"
   GREEN WINS!":GOTO 1090
```

```
1060 IF p2score>9 THEN LOCATE 7,5:PRINT"
   BLUE WINS!":GOTO 1090
1070 CLS:GOSUB 1130:shoot2=0:GOTO 170
1080 t=TIME :WHILE t+1500>TIME:WEND
1090 LOCATE 3,15:PRINT"Press any key":WH
   ILE INKEY$<>"":WEND:WHILE INKEY$=""
   :WEND
1100 p1score=0:p2score=0:GOTO 1170
1110 '
1120 '
1130 LOCATE 1,1:PRINT USING"GREEN ###
   BLUE ###";p1score,p2score
1140 RETURN
1150 '
1160 '
1170 CLS:LOCATE 4,3:PRINT"Select option"
1180 LOCATE 6,5:PRINT"1 One player":LOCA
   TE 6,7:PRINT"2 Two player"
1190 a$=INKEY$
1200 IF a$="1"THEN twoplayer=0:GOTO 1070
1210 IF a$="2"THEN twoplayer=1:GOTO 1070
1220 GOTO 1190
```



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US Gold – past, present and future

You are bound to have a US Gold game somewhere in your collection. Christina Erskine looks at the people who worked to put it there.

US Gold is not commonly referred to as an empire for nothing: In 1986 it clocked up European sales of 2.02 million units, with revenue in excess of £9 million, though the company won't say what proportion of that money refers to UK sales alone.

It has been quoted as the 17th largest company in the computer market – in a list that includes IBM, Olivetti, Apple and Amstrad. And it's the only software company in the top 25.

Its links with other UK computer companies and, of course, its American software sources lend weight to the imperialist tags.

Gold's parent company is Woodward-Brown Holdings, which also acts as an umbrella to Centresoft Distribution, Gremlin Graphics and Ocean Software (the Woodward refers to David Ward and Jon Woods, directors of Ocean). That's a hefty slice of the UK software market.

US Gold has gone from trading label for US imports, to US and UK licensees for software on all home machines and IBM compatibles, marketing agents for a number of independent British companies and major exporters of software overseas in two years. And US Gold's France, Germany, Spain and Italy are all doing nicely, thank you.

Plenty of other home computer companies have enjoyed rapid growth in that space of time – sister company Ocean, for starters – but none have done it quite as thoroughly as Gold.

Anyone who picked up on the US Gold publicity as it was beginning conversions to the Amstrad machines might assume that the firm, if not the entire group, of companies must have been started with megabucks and marketing muscle. Not true.

At least US Gold didn't begin "in an attic with a DIY ZX80" – it was even more accidental than that.

In 1982/3, husband and wife team Geoff and Anne Brown (ex-teacher/ unsuccessful rock musician and bank clerk respectively) had set up a software distribution company, Centresoft, buying in games for Spectrum and Commodore computers from the software companies and selling and distributing the products to the shops.



Geoff Brown . . . found it hard going

Together with the bulk of the business, some Atari 800 software was imported from the US. While much of it was of a higher quality than the home-grown equivalent, it was a nightmare for the Browns to sell.

Expensive imports

The import cost, together with the comparatively expensive prices in the US meant that Atari games cost about £30 in the UK. Compared with Spectrum titles at around a fiver (in those days) it's hardly surprising the stuff never moved from the shelves.

When the Commodore 64 began to take off in the UK, its American-imported software suffered from the same pricing problem. Geoff Brown reckoned he could do something about it.

He found it hard going: "We approached companies such as Datasoft and Cosmi in the US; we guaranteed them volume sales, in return for allowing us to manufacture, package and set our own price. It was like climbing Mount Everest with only one leg; they simply weren't interested".

American companies didn't see much point in taking a gamble with their products in a much smaller market, at a much lower price and where British eccentricity had dictated that games players should spend 10 minutes waiting for a game to load from tape.

Persistence paid off, however, and Brown managed to secure a few US licences. But US Gold as it is today didn't really begin to emerge until Beachhead, the Access game which the company believes is one of its landmarks.

Access was, at the beginning of 1984, largely comprised of two people in a back room. However, its product, Beachhead, looked promising.

The sales Gold generated for it over here made US companies much more willing to take the risk. In addition to this, the games boom was beginning to



David Ward of Ocean

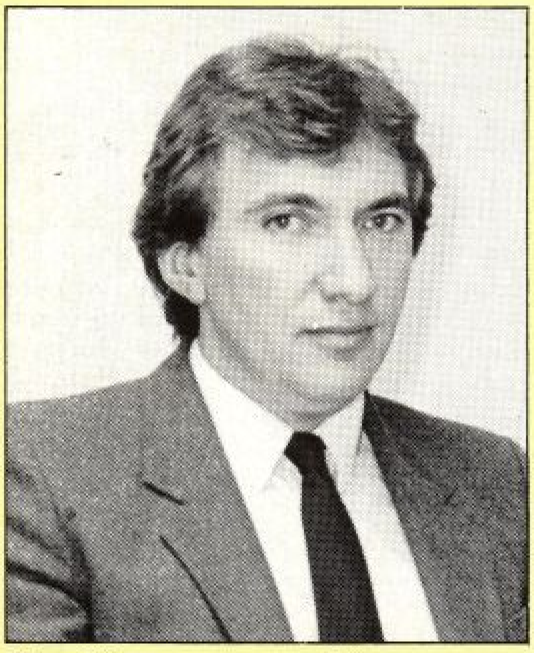
Biggest buy-out was Ultimate

die away in the States and exporting to the still expanding British market looked like a good way to improve cash flow.

The tide turns

So instead of Geoff Brown pestering the US companies, the US firms began to pester him. US Gold was formed in January 1984 to put things on a firmer, more official footing. Creating a single label (as opposed to going out through Centresoft, the wholesaler) gave the titles a marketing identity.

Bringing in Ocean (interestingly, Ultimate was also approached for this job) to take the weight of conversion work and advertising campaigns helped enormously. Until then the US imports had only been available for Commodore and Atari – nothing for British machines.



Tim Chaney . . . something new

The launch of the Amstrad CPC 464 in June 1984 kept the momentum going for conversion work. That, and the backlog of products to be converted for the Spectrum, and the continuing queue of American companies all wanting a slice of the British cake, ensured that US Gold grew and grew.

The sheer quality of many of the US games – particularly sports simulations – ensured a willing market, and one that was prepared to pay the standard US Gold price of £9.95 for a cassette game.

A tenner was a hefty amount to pay for games software then, and one (minor) reason for the rise in games prices has almost certainly been other companies reckoning that "if they can do it, so can we".

By the end of 1985, licences with firms such as Epyx (Summer, Winter Games), Sierra On-Line, Datasoft, Microprose, you name them... were all signed and sealed.

Practically the only hiccup along the way had been Broderbund deciding to stick with Ariolasoft for the UK release of Karateka, instead of moving over to US Gold as had been announced.

Last year, however, saw a distinct change in US Gold policy. There is, after all, only a finite number of US games yet to be licensed. There are far fewer US games being produced these days.

Those that are have become much more complex, and some virtually impossible to transfer on to cassette (witness Mickey's Space Adventure – deemed suitable for disc only and didn't exactly storm the charts).

Most American companies have moved over to producing 16 bit software for Amigas and Atari STs – but it would be economic madness to import them in quantity here while both machines still try to find their feet.

Some have woken up to the idea that if US Gold publishes titles from all the American firms, then their slice of the publicity process is that much smaller.

At the beginning of this year, Microprose failed to reach an agreement over a guaranteed two year contract US Gold wanted and the two parted company.

Converted from the arcades

These shifts in the market led US Gold to begin originating software in the UK, largely through the acquisition of coin-op licences. Thus we have seen Xevious, Breakthru and the much-heralded Gauntlet hit the screens recently.

They also led to a diversification into taking on independent companies to deal with the distribution and marketing and so on of their products, while retaining the independent brand label – UK Gold, if you like.

English Software and Vortex were among the notables who succumbed to this temptation, but the most notable of them all was Ultimate.

Ultimate had not released anything technically stunning for some months at the time of the deal and games players waited with bated breath to see if relieving Ultimate of the burdens of advertising and marketing would let the team get back to producing games that set standards for others to follow.

So far, the answer has been a resounding No. The only post-Gold releases have been Cyberrun and Pentagram, competent, neat programs which added little or nothing to previous efforts. And even they were started – or at least planned in the pre-Gold days. So what has Ultimate been up to?

The answer, surprisingly enough, is that US Gold claims it doesn't really know. Ultimate boss Tim Stamper set up a label called RARE last year and began work for Nintendo on arcade

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Amsoft

machine games.

"I didn't know about RARE until I read about it in the press," says USG general manager Tim Chaney.

But we can expect something new from Ultimate for home micros this year. Chaney again: "They are working on 8 bit stuff; we've just got the artwork in for the next title and it looks great. I don't know what it's called though, because they still keep themselves very much to themselves."

US Gold itself is setting great store on the coin-ops for 1987. Says Chaney, "We have a lot of licences for this year and a great deal of coin-op conversions – in fact, our catalogue for next Christmas is now fixed. One of the biggest will be Road Runner, from the coin-op based on the Loony Tunes cartoon character."

The licence for a deal like this – with the character coming from one company and the game from another is not the problem it may seem. Warner Brothers own both Loony Tunes and Atari Coin-Op so the deal is simplified.

Want a job?

The company is ready to begin a grand advertising campaign for program coders in the next month or so to deal with converting these licences into games – and sales.

Chaney was typically bullish about US Gold's prospects of enticing the creme de la creme: "Well, there's no reason for anyone to work for anyone else, is there? We've got better terms, better security, the best products".

Its UK origination plans did not, however, get off to a very good start – no article on US Gold should go without a mention of the World Cup Carnival fiasco.

Faced with a licence (to produce the Mexico 1986 World Cup computer game) which would be completely useless to the company after June and no game to use it on, it bought up the rights to Artic's chestnut World Cup.

What emerged in the shops had some impressive packaging, but computing soccer fans were buying games back in 1984 and the majority didn't appreciate having the same game twice.

Problems even threatened to cloud the major coin-op licence, Gauntlet, when Electric Dreams promoted its licence to the original Gauntlet, called Dandy. It is said that a substantial sum of money changed hands on this one to secure an agreement, and it was probably well-spent. Gauntlet stayed at the number one slot in the Gallup charts over Christmas and into the early months of this year.

8 bit software in the US may be thinner on the ground than it was, but the States is proving a valuable source of 16 bit software and this will continue into 1987.

While Gold feels that the Amiga and Atari ST are still unproven, to a greater or lesser extent, such is not the case with PC compatibles and it sees the launch of the Amstrad PC as making the market particularly interesting.

"We've sourced and released a lot of IBM software", commented Tim Chaney. "It's been aimed at the existing IBM market, but I'm not sure about the Amstrad PC and what people are buying it for."

Speculating on what the Gold/Ocean group will move on to next is a favourite industry pastime. We've heard of the "diversification into board games" theory and the "stock market flotation" prediction.

Doubtless both these and other options have been considered and discussed, but the company will not comment on specific long-term plans.

ACU

Music Machine

Rupert Goodwins plays with a new peripheral which sounds better than most

Microcomputers and music have always been close friends, ever since a ZX80 games cassette was played on a walkman by mistake, giving Gary Numan a nasty surprise which he later passed on to the rest of us.

Admittedly, musical add-ons for the CPCs have been a little thin on the ground. They've usually been pass-me-downs from the Spectrum, possibly the best example to date being the Specdrum/Amdrum (reviewed in *ACU*, October 1986).

The Music Machine from Ram Electronics and Flare Technology (a bunch of ex-Sinclairites) follows this trend.

The Music Machine contains in its slim black plastic an initially amazing selection of silicon bits to push out the noises.

As well as the drum machine (much like the aforementioned Amdrum), there's a sampler, lotsa Midi magic and an amplifier. Let's take them in order.

Beating the drum

The drum machine bears comparison with Amdrum all down the line. Eight separate noises can be played back according to a pattern you type in, to make up a simple rhythm or complete song.

The sounds provided are rather good as well, which doesn't hurt in a drum machine. The editing of the patterns is much simpler than with Amdrum; more on this and the rest of the software later.

Unlike Cheetah, Ram doesn't market extra tapes containing exotic percussion. This isn't an oversight; they're just not needed. For where the Music Machine really starts to make waves is in the input department.

It has, in the parlance, got a sampler built in, which takes an electrical signal from a radio, tape, record or microphone. This it converts into computer data, which can be stashed away like any other data.

All you need do is point a mike (supplied) at something noisy and press a button, and you've got it taped – well, rammed.

This sample can then be edited to just the right length, reversed at will and used as another drum sound or even as a musical voice.

It's currently very much in vogue in the music industry to use sampled sounds in preference to the real thing; there are places in London where one cannot move for cadaverous youths waiting for someone to die noisily into their tape recorders, just to feed a bit of atmosphere into their synths.

Free samples

The process of sampling is as simple as recording something on cassette. The only thing that can go wrong is the level; if it's too low the sound will be too quiet on playback, and if it's too high everything ends up distorted.

Sensibly, there's a twiddly thing atop the Music Machine, known in the music trade as a knob, which can adjust the level in conjunction with the onscreen volume meter. You can start the sample when the input reaches a certain level, or when you press a button on the keyboard.

There's a limit to how much you can store in your computer. Exactly what the capacity is depends on the quality of recording, and how much else in the way of drum sequences and tunes resides in the guts of the machine.

The quality is fixed by various elements of the design of the Music Machine and is amply good enough. You can tell the difference between a sampled sound and the real thing, but the response isn't anything to complain about.

It's on a par with a good transistor radio, and the better your amplifier or headphones the better it performs.

But back to the capacity. Generally, it's around 1.2 seconds. Now that might not seem a lot, especially when there can be up eight separate samples residing in ram at once, but it's very useful.

And, as you can make sounds repeat, there's plenty of scope to out-sample PPPPaul Hardcastle.

Most percussive noises take less than 0.1 of a second, so even a full drum kit will most likely leave memory to spare. If you feel the urge to sample voices and longer sounds, then you're going to have to be a little more inventive.





The Music Machine . . . handy headphone amplifier built in

Sound and vision

There are some editing facilities for samples. You can display a sound as a graph of volume against time and move a pair of pointers over it to select any portion.

You can zoom in for a close look at any part of the sample, and this helps to select start and end points that are at exactly the same level.

If they're not, then when the sound repeats there can be a sudden change in the output, sounding like an old-fashioned vinyl record type click.

Got eight samples yet? Good. Now there are various ways to use those carefully captured cadences. The easiest and most immediate is from the keyboard.

In Piano mode, you chose one sample and play it at various pitches as you would play a piano. In Drum mode, eight keys map on to the samples and you can pat them with your pinkies as you would a miniature drum kit.

Then there are the compositional tools. If you want to be musical you can write bars of music on a full-screen stave editor. You can only use one voice, but this can be played at two pitches at once.

Having knocked up a bar or two you can then make a tune by linking them together. Likewise, drum sounds can be put together in bars and thence into tunes, but you can have up to three drum sounds playing at once. The traditional things like tempo can be varied in the usual way.

The final way to release those sounds on an unsuspecting world is through the Midi ports. MIDI – Musical Instrument Digital Interface – is to synthesisers and drum machines what RS232 is to modems and computers: It links them all together.

And, amazingly enough, it really is a standard. Everything is fixed; speed, connector-types, data types, the lot.

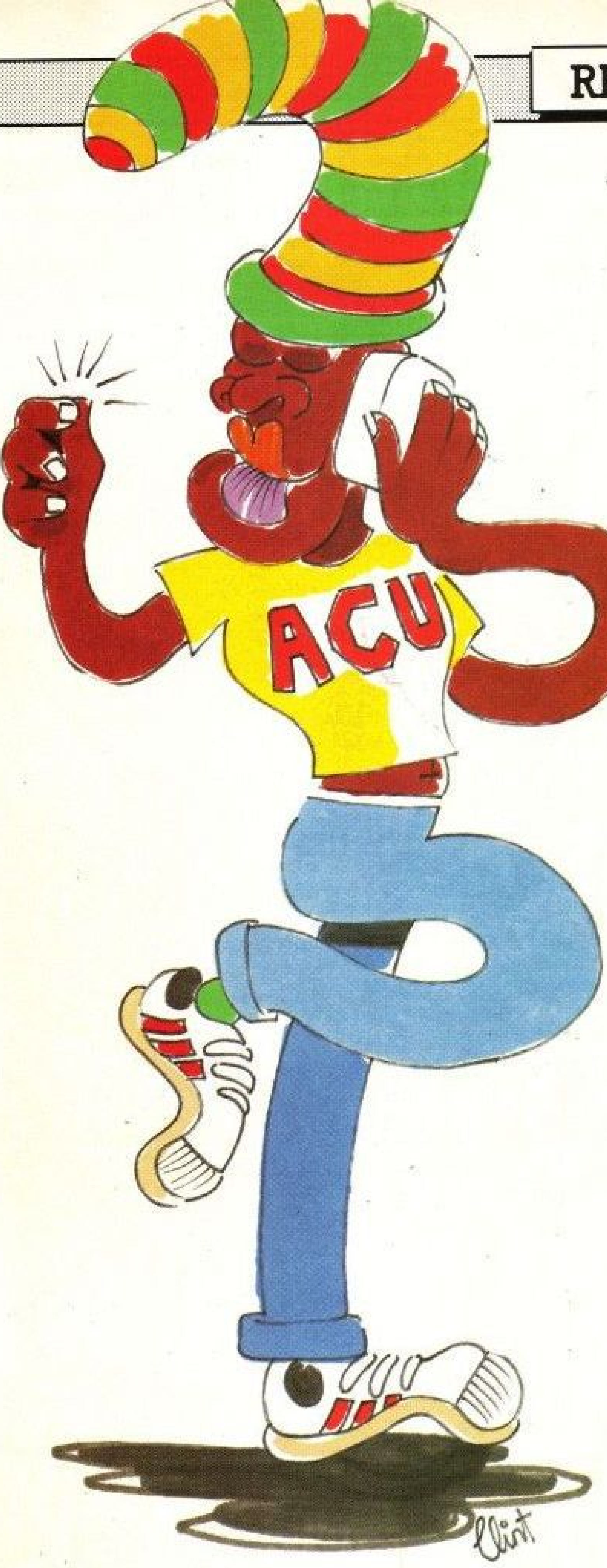
You can take a Japanese synth made years ago and the latest American drum machine – and if they've both got Midi, they'll talk to each other with no fiddling.

Midi is getting very big in the music world, and Music Machine's got Midi. As a result, you can take a synthesiser (like the very wonderful Casio CZ-101) and use it to play the samples in the Machine.

You can also take a tune or drum rhythm you knocked up in the Machine and squirt it out to a drumbox or Fairlight. But then the Fairlight's a little redundant with a Music Machine and a CZ-101.

Well connected

You can also talk to another Music Machine. I had the Spectrum version for a few months before I got the



Straddy (no, not the violin), and I hooked the two together: It worked wonderfully.

The software is structured so that although you can't play both drums and music on one Machine at once, you can send the drum info down the Midi and play the music, or vice versa.

You can also play the Amstrad's built-in sound chip from the external synthesiser, but this seems a mite peculiar. Like getting Eric Clapton in your band and making him play the triangle.

Another little extra which seems slightly out of place, but fun nevertheless, is the Echo. You type in a delay in milliseconds and anything you say in the microphone comes out of the amplifier that length of time later.

With a little feedback, some nice reverberation and fun effects can be generated, including some indescribable noises that are immediately recognisable from some of the wierder records one hears. So now you know how they do it, and can do it yourself should you feel the urge.

That's the features, now for the functionality. Harking back to the Amdrum yet again, the software was its Achilles' heel.

The Music Machine is much better behaved. Everything is a single key press from the Main Menu and all the options are well labelled.

The few minor eccentricities are mostly forgivable – the only cardinal sin is the omission of an "Are you sure?" mugtrap on the Delete menu. One press, and away goes a few hours of heartfelt hiphop.

Memory management is good and there's usually an on-screen indicator of how much time you've got to fill. There are options to switch between tape and disc, and catalog functions, though no through connector for DDI-1 owners.

The different menu screens fade in and out in a slow, stylish manner which also happens to be indescribably frustrating if you want to do it quickly.

Musical notation

The handbook is so much better than the opposition it's almost unfair to make a comparison. Lightly written with a definite streak of humour, it manages to get everything in and indexed without being terse or verbose.

And anything which starts with a chapter called "Can't wait to try it, huh?" can't be entirely bad. There's ample technical information concerning I/O ports, filters and MIDI; anyone with a technical bent should be able to produce their own software to do anything they want to.

I should mention that I had the Spectrum manual with a little note detailing differences and promising the Amstrad version "in the near future". But the software is so similar that nobody should have problems in the meantime.

It might seem strange, but your family, friends and neighbours will probably have little enthusiasm for your latest renderings, especially in the early hours.

Flare's inclusion of a headphone amplifier is therefore to be loudly applauded – or, if it's in the early hours, given a quiet nod of approval. As long as you can supply walkman-style cans, you're able plug in and go.

And you shouldn't have any problems with reliability; a quick peek inside the box proved reassuring. The link between the level control and the knob seemed a little flimsy at first, but an unnecessarily nasty waggle was withstood admirably.

People will probably want to knock up their own software. In a way, the Music Machine's just too good. The software supplied tries to show off every aspect of the Machine, but in the process leaves a lot of potential unrealised – after a few hours playing around, it's easy to spot places for improvement.

For example, it would be useful to have a sequencer for Midi, so you can play a tune in on the external synth, record it, edit it and play it back. It would be even better (and fairly easy) to have a full synthesiser function for making your own noises from scratch, or editing samples in complex ways.

And special versions of the software to make good use of the extra 64k of ram 6128 owners have would be nifty too.

Fun filled

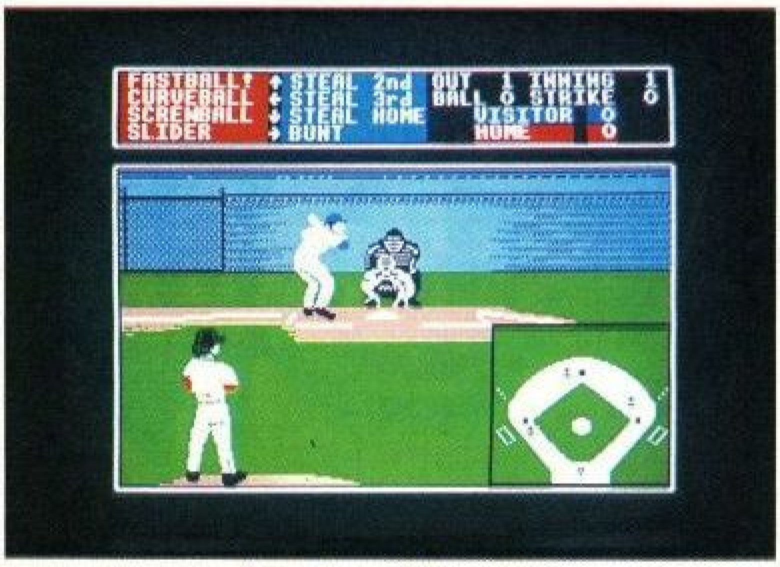
But even without those goodies (which Flare hints might be on the way), the Music Machine is a worthwhile hunk of technology.

Sampling is fun, drum machines are fun, Midi is fun. And all in one package for £50 – the price of four or five good games? Fun fun fun!

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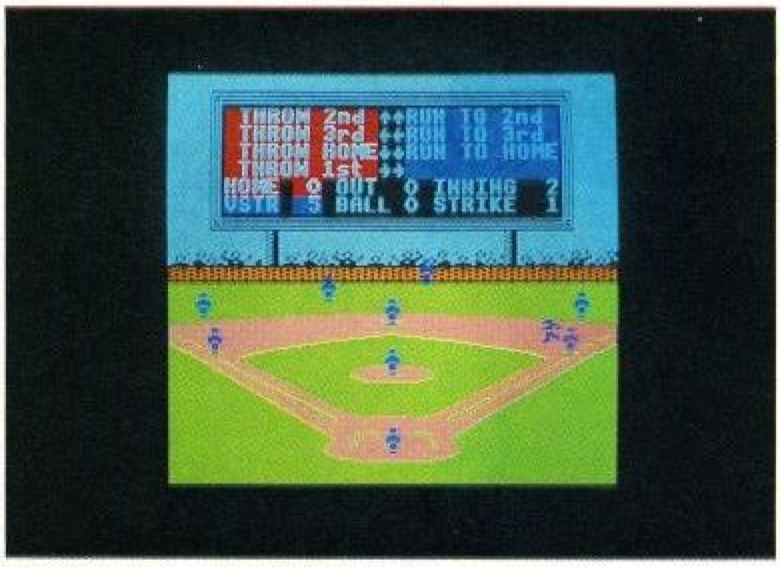
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GOLDEN
COIN-OP
Hot Shot
Imagine
...the name of the game
Imagine Software (1984) Limited
6 Central Street • Manchester M2 5NS
Screen shots taken from Arcade version.

Play alonga CPC



This program enables you to use the keyboard of your CPC Amstrad to play tunes and entertain Auntie. As it stands the assembler listing is written for the CPC 6128 and 664 but it should run on the CPC 464.

The Basic listing is designed for the 6128 keyboard: It will work with the 464 but some of the keys are not in a logical place on the keyboard.

This is because the 6128 keypad is adjacent to the main keyboard and the 464 keypad is separated from the QWERTY bit.

When typing in the Basic listing you should be especially careful with the last number on each data line. This is a subtotal for the line and is your guarantee of easy debugging.

The program stops and informs you if there is an error, and will give you a line to check. If you get an error in the sum total then you have to check all the data lines.

Save the program before running it, as wrong numbers may cause it to hang up the machine and you will lose all your hard work. Even if it is 100 per cent correct when the program runs you will not be able to save it.

Provided everything is OK the machine code is set up and called. The screen clears and you are asked if you wish to use the preset envelopes built into the program – hit Y or N accordingly.

If you already have envelopes defined then you can use up to nine of them. You could also define envelopes 6 to 9 before running the program and use them with those which are provided.

Next you will get a screen with information about which keys do what. You can use up to nine tone and amplitude envelopes over seven octaves.

The Caps lock produces the note G and that row of keys – right up to the f3, which is the B – corresponds to the white keys on the piano.

The row above equals the black keys, so you have two and a half octaves to play with before resorting to the octave shift facility.

Hit a number from 0 to 5 to change to the corresponding octave. Control and a number changes the tone envelope, while shift and a number changes the volume envelope. Don't worry about remembering this, it is all explained on-screen

You can play up to three notes at a time which is handy for chording. It really sounds best through a quality amplifier in mono mode to centralise the channels.

That's when you realise how good the Amstrad sound system really is. →

PROGRAMMING

```
10 ' ***************************
20 ' *      THE NOBLE ORGAN      *
30 ' *        By Cy Noble        *
40 ' *                           *
50 ' *                           *
60 ' *                           *
70 ' ***************************
80 MEMORY &97FF:DEFINT a-s
90 sub=0:ttl=0:ln=1000:ttlchk=182581
100 start=&9800:organ=start
110 FOR a=0 TO 1706 STEP 8:sub=0
120 FOR b=0 TO 7
130 READ p$:p1=VAL("&"+p$)
140 POKE start,p1:start=start+1
150 sub=sub+p1:NEXT
160 READ p$:p1=VAL("&"+p$)
170 IF p1=sub THEN PRINT"Line";ln;" OK"
    ELSE GOTO 200
180 ln=ln+10:ttl=ttl+sub
190 NEXT
200 IF ttl<>ttlchk THEN 230
210 CALL organ:END
220 PRINT"Data error in Line";ln:END
230 PRINT"Checksum error - check subto
    l"
240 PRINT"on the end of each data line"
250 END
1000 DATA 3E,01,CD,0E,BC,CD,D1,9C,410
1010 DATA 20,03,CD,39,98,3E,0C,CD,2D8
1020 DATA 5A,BB,CD,8A,9C,3E,03,CD,416
1030 DATA 19,9C,3E,00,32,8C,9E,32,281
1040 DATA 8D,9E,32,8E,9E,CD,4A,9C,43C
1050 DATA 3E,00,CD,5D,9C,CD,6C,98,3D5
1060 DATA CD,A7,BC,3E,0C,CD,5A,BB,45C
1070 DATA C9,3E,01,21,36,9E,F5,E5,3D7
1080 DATA CD,BF,BC,E1,3E,07,85,6F,462
1090 DATA 30,01,24,F1,C6,01,FE,06,311
1100 DATA 20,EC,D6,05,F5,E5,CD,BC,54A
1110 DATA BC,E1,3E,0A,85,6F,30,01,30A
1120 DATA 24,F1,C6,01,FE,06,20,EC,3EC
1130 DATA CD,7E,9C,C9,DD,21,8C,9E,4D8
1140 DATA 3E,42,CD,1E,BB,C0,3E,20,344
1150 DATA CD,1E,BB,C4,F9,9B,3E,40,47C
1160 DATA CD,1E,BB,C4,FD,9B,3E,41,481
1170 DATA CD,1E,BB,C4,01,9C,3E,39,37E
1180 DATA CD,1E,BB,C4,05,9C,3E,38,381
1190 DATA CD,1E,BB,C4,09,9C,3E,31,37E
1200 DATA CD,1E,BB,C4,0D,9C,3E,30,381
1210 DATA CD,1E,BB,C4,38,9C,3E,29,3A5
1220 DATA CD,1E,BB,C4,3C,9C,3E,28,3A8
1230 DATA CD,1E,BB,C4,40,9C,3E,21,3A5
1240 DATA CD,1E,BB,C4,44,9C,3E,46,3CE
1250 DATA CD,1E,BB,C4,E3,99,3E,43,467
1260 DATA CD,1E,BB,C4,EE,99,3E,45,474
1270 DATA CD,1E,BB,C4,F9,99,3E,3B,475
1280 DATA CD,1E,BB,C4,04,9A,3E,3C,382
1290 DATA CD,1E,BB,C4,0F,9A,3E,3D,38E
1300 DATA CD,1E,BB,C4,1A,9A,3E,32,38E
1310 DATA CD,1E,BB,C4,25,9A,3E,35,39C
1320 DATA CD,1E,BB,C4,30,9A,3E,33,3A5
1330 DATA CD,1E,BB,C4,3B,9A,3E,34,3B1
1340 DATA CD,1E,BB,C4,46,9A,3E,2C,3B4
1350 DATA CD,1E,BB,C4,51,9A,3E,2A,3BD
1360 DATA CD,1E,BB,C4,5C,9A,3E,2D,3CB
1370 DATA CD,1E,BB,C4,67,9A,3E,23,3CC
1380 DATA CD,1E,BB,C4,76,9A,3E,25,3DD
1390 DATA CD,1E,BB,C4,85,9A,3E,22,3E9
1400 DATA CD,1E,BB,C4,94,9A,3E,24,3FA
1410 DATA CD,1E,BB,C4,A3,9A,3E,1D,402
1420 DATA CD,1E,BB,C4,B2,9A,3E,1A,40E
1430 DATA CD,1E,BB,C4,C1,9A,3E,1C,41F
1440 DATA CD,1E,BB,C4,D0,9A,3E,11,423
1450 DATA CD,1E,BB,C4,DF,9A,3E,13,434
1460 DATA CD,1E,BB,C4,EE,9A,3E,12,442
1470 DATA CD,1E,BB,C4,FD,9A,3E,14,453
1480 DATA CD,1E,BB,C4,0C,9B,3E,0D,35C
1490 DATA CD,1E,BB,C4,1B,9B,3E,0C,36A
1500 DATA CD,1E,BB,C4,2E,9B,3E,0E,37F
1510 DATA CD,1E,BB,C4,41,9B,3E,04,388
1520 DATA CD,1E,BB,C4,54,9B,3E,05,39C
1530 DATA CD,1E,BB,C4,67,9B,3A,8C,432
1540 DATA 9E,B7,28,0C,CB,BF,CD,1E,3FE
1550 DATA BB,20,05,CD,29,9C,18,20,2AA
1560 DATA 3A,8D,9E,B7,28,0C,CB,BF,3DA
1570 DATA CD,1E,BB,20,05,CD,29,9C,35D
1580 DATA 18,0E,3A,8E,9E,B7,28,08,273
1590 DATA CB,BF,CD,1E,BB,CC,29,9C,4C1
1600 DATA C3,6C,98,3E,46,CD,CC,9B,47F
1610 DATA 2A,F1,9C,C3,77,9B,3E,43,40D
1620 DATA CD,CC,9B,2A,F3,9C,C3,77,527
1630 DATA 9B,3E,45,CD,CC,9B,2A,F5,471
1640 DATA 9C,C3,77,9B,3E,3B,CD,CC,483
1650 DATA 9B,2A,F7,9C,C3,77,9B,3E,46B
1660 DATA 3C,CD,CC,9B,2A,F9,9C,C3,4F2
1670 DATA 77,9B,3E,3D,CD,CC,9B,2A,3EB
1680 DATA FB,9C,C3,77,9B,3E,32,CD,4A9
1690 DATA CC,9B,2A,FD,9C,C3,77,9B,4FF
1700 DATA 3E,35,CD,CC,9B,2A,FF,9C,46C
1710 DATA C3,77,9B,3E,33,CD,CC,9B,47A
1720 DATA 2A,01,9D,C3,77,9B,3E,34,30F
1730 DATA CD,CC,9B,2A,03,9D,C3,77,438
1740 DATA 9B,3E,2C,CD,CC,9B,2A,05,368
1750 DATA 9D,C3,77,9B,3E,2A,CD,CC,473
1760 DATA 9B,2A,07,9D,C3,77,9B,3E,37C
1770 DATA 2D,CD,CC,9B,2A,F1,9C,CB,4E3
1780 DATA 3C,CB,1D,C3,77,9B,3E,23,35A
1790 DATA CD,CC,9B,2A,F3,9C,CB,3C,4F4
1800 DATA CB,1D,C3,77,9B,3E,25,CD,3ED
1810 DATA CC,9B,2A,F5,9C,CB,3C,CB,4F4
1820 DATA 1D,C3,77,9B,3E,22,CD,CC,3EB
1830 DATA 9B,2A,F7,9C,CB,3C,CB,1D,447
1840 DATA C3,77,9B,3E,24,CD,CC,9B,46B
1850 DATA 2A,F9,9C,CB,3C,CB,1D,C3,471
1860 DATA 77,9B,3E,1D,CD,CC,9B,2A,3CB
1870 DATA FB,9C,CB,3C,CB,1D,C3,77,4C0
1880 DATA 9B,3E,1A,CD,CC,9B,2A,FD,44E
1890 DATA 9C,CB,3C,CB,1D,C3,77,9B,460
1900 DATA 3E,1C,CD,CC,9B,2A,FF,9C,453
1910 DATA CB,3C,CB,1D,C3,77,9B,3E,402
1920 DATA 11,CD,CC,9B,2A,01,9D,CB,3D8
1930 DATA 3C,CB,1D,C3,77,9B,3E,13,34A
1940 DATA CD,CC,9B,2A,03,9D,CB,3C,405
1950 DATA CB,1D,C3,77,9B,3E,12,CD,3DA
1960 DATA CC,9B,2A,05,9D,CB,3C,CB,405
1970 DATA 1D,C3,77,9B,3E,14,CD,CC,3DD
1980 DATA 9B,2A,07,9D,CB,3C,CB,1D,358
1990 DATA C3,77,9B,3E,0D,CD,CC,9B,454
2000 DATA 2A,F1,9C,CB,3C,CB,1D,CB,471
2010 DATA 3C,CB,1D,C3,77,9B,3E,0C,343
2020 DATA CD,CC,9B,2A,F3,9C,CB,3C,4F4
2030 DATA CB,1D,CB,3C,CB,1D,C3,77,411
2040 DATA 9B,3E,0E,CD,CC,9B,2A,F5,43A
2050 DATA 9C,CB,3C,CB,1D,CB,3C,CB,45D
2060 DATA 1D,C3,77,9B,3E,04,CD,CC,3CD
2070 DATA 9B,2A,F7,9C,CB,3C,CB,1D,447
2080 DATA CB,3C,CB,1D,C3,77,9B,3E,402
2090 DATA 05,CD,CC,9B,2A,F9,9C,CB,4C3
2100 DATA 3C,CB,1D,CB,3C,CB,1D,3A,34D
2110 DATA 8B,9E,B7,28,07,47,CB,3C,35D
2120 DATA CB,1D,10,FA,3A,8C,9E,CB,421
2130 DATA 7F,20,03,B7,20,14,3A,8D,254
2140 DATA 9E,CB,7F,20,03,B7,20,18,2FA
2150 DATA 3A,8E,9E,CB,7F,C0,B7,20,447
2160 DATA 1D,C9,22,92,9E,CB,FF,32,434
2170 DATA 8C,9E,21,8F,9E,C3,AA,BC,4A1
2180 DATA 22,9B,9E,CB,FF,32,8D,9E,482
2190 DATA 21,98,9E,C3,AA,BC,22,A4,446
2200 DATA 9E,CB,FF,32,8E,9E,21,A1,488
2210 DATA 9E,C3,AA,BC,47,3A,8C,9E,472
2220 DATA CB,BF,B8,C8,B7,20,05,78,45E
2230 DATA 32,8C,9E,C9,3A,8D,9E,CB,455
2240 DATA BF,B8,C8,B7,20,05,78,32,3C5
2250 DATA 8D,9E,C9,3A,8E,9E,CB,BF,4E4
2260 DATA B8,C8,B7,C0,78,32,8E,9E,4CD
2270 DATA C9,3E,00,18,14,3E,01,18,18A
2280 DATA 10,3E,02,18,0C,3E,03,18,CD
2290 DATA 08,3E,04,18,04,3E,05,18,C1
2300 DATA 00,CB,79,20,35,CB,69,20,2ED
2310 DATA 44,F5,21,0A,0A,CD,75,BB,36B
2320 DATA F1,32,8B,9E,C6,30,CD,5A,469
2330 DATA BB,DD,36,00,00,DD,36,01,2E2
2340 DATA 00,DD,36,02,00,C3,A7,BC,33B
2350 DATA 3E,06,18,0A,3E,07,18,06,C9
2360 DATA 3E,08,18,02,3E,09,CB,69,1DB
2370 DATA 20,13,F5,21,0B,11,CD,75,2A7
2380 DATA BB,F1,32,91,9E,32,9A,9E,477
2390 DATA 32,A3,9E,18,C7,F5,21,0C,374
2400 DATA 13,CD,75,BB,F1,32,90,9E,461
2410 DATA 32,99,9E,32,A2,9E,FE,00,3D9
2420 DATA F5,CC,7E,9C,C4,7A,9C,F1,5A6
2430 DATA 18,AA,3E,00,18,02,3E,0F,167
2440 DATA 32,95,9E,32,9E,9E,32,9E,3A3
2450 DATA 9E,C9,21,03,0A,CD,75,BB,392
2460 DATA 21,27,9D,06,3C,7E,CD,5A,2CC
2470 DATA BB,23,10,F9,06,CC,7E,CD,404
2480 DATA 5A,BB,23,10,F9,0E,02,21,272
2490 DATA 2F,9E,06,07,7E,CD,5A,BB,33A
2500 DATA 23,3E,20,CD,5A,BB,10,F4,367
2510 DATA 0D,20,EC,21,2F,9E,06,02,20F
2520 DATA 7E,23,CD,5A,BB,3E,20,CD,3AE
2530 DATA 5A,BB,10,F4,3E,29,C3,5A,39D
2540 DATA BB,21,09,9D,06,1E,7E,CD,2F1
2550 DATA 5A,BB,23,10,F9,CD,18,BB,3E1
2560 DATA FE,5A,38,02,EE,20,FE,59,3F7
2570 DATA 28,04,FE,4E,20,EF,FE,59,3DE
2580 DATA C9,F7,09,68,09,E1,08,61,384
2590 DATA 08,E9,07,77,07,0C,07,A7,230
2600 DATA 06,47,06,ED,05,98,05,47,229
2610 DATA 05,0C,1F,0A,0A,50,52,45,12B
2620 DATA 53,45,54,20,45,4E,56,45,23A
2630 DATA 4C,4F,50,45,53,20,3F,20,202
2640 DATA 18,28,59,2F,4E,29,18,54,1AB
2650 DATA 68,65,20,4E,6F,62,6C,65,2DD
2660 DATA 20,4F,72,67,61,6E,1F,01,237
2670 DATA 0A,4F,63,74,61,76,65,20,28C
2680 DATA 0D,0A,54,6F,6E,65,20,65,232
2690 DATA 6E,76,65,6C,6F,70,65,0D,306
2700 DATA 0A,56,6F,6C,75,6D,65,20,2A2
2710 DATA 65,6E,76,65,6C,6F,70,65,35E
2720 DATA 0D,0A,0A,4E,75,6D,62,65,218
2730 DATA 72,73,20,30,20,74,6F,20,258
2740 DATA 35,20,63,68,61,6E,67,65,2BB
2750 DATA 20,4F,63,74,61,76,65,0D,28F
2760 DATA 0A,43,4F,4E,54,52,4F,4C,22B
2770 DATA 20,2B,20,30,20,74,6F,20,1BE
2780 DATA 39,20,63,68,61,6E,67,65,2BF
2790 DATA 20,54,6F,6E,65,20,45,6E,289
2800 DATA 76,65,6C,6F,70,65,0D,0A,2A2
2810 DATA 53,48,49,46,54,20,2B,20,1E9
2820 DATA 30,20,74,6F,20,39,20,63,20F
2830 DATA 68,61,6E,67,65,20,56,6F,2E8
2840 DATA 6C,75,6D,65,20,45,6E,76,2FC
2850 DATA 65,6C,6F,70,65,0D,0A,45,271
2860 DATA 53,43,20,74,6F,20,66,69,288
2870 DATA 6E,69,73,68,1F,12,14,4B,242
2880 DATA 45,59,53,1F,03,16,18,71,1B2
2890 DATA 20,77,20,20,20,72,20,74,1FD
2900 DATA 20,20,20,75,20,69,20,6F,1ED
2910 DATA 20,20,20,40,20,5B,20,20,15B
2920 DATA 20,34,20,35,20,36,0D,0A,116
2930 DATA 18,43,4C,20,61,20,73,20,1DB
2940 DATA 64,20,66,20,67,20,68,20,219
2950 DATA 6A,20,6B,20,6C,20,3B,20,1FC
2960 DATA 5D,20,52,20,31,20,32,20,192
2970 DATA 33,0D,0A,0A,28,67,20,61,164
2980 DATA 62,63,64,65,66,67,82,04,2E1
2990 DATA 01,01,04,FF,01,82,04,01,18D
3000 DATA 02,04,FF,02,82,04,01,04,192
3010 DATA 04,FF,04,02,01,14,01,0A,129
3020 DATA FE,01,02,01,EC,01,0A,02,1FB
3030 DATA 01,03,0F,01,01,64,00,64,DD
3040 DATA 64,00,64,03,01,0F,01,03,DF
3050 DATA FF,0A,64,00,64,03,0F,01,1E4
3060 DATA 01,03,FF,0A,64,00,64,03,1D8
3070 DATA 05,03,01,05,FD,01,00,00,10C
3080 DATA 01,03,05,03,02,05,FD,02,112
3090 DATA 00,00,01,00,00,00,00,01,2
3100 DATA 00,00,00,00,00,0F,00,FF,10E
3110 DATA 02,00,00,00,00,00,0F,00,11
3120 DATA FF,04,00,00,00,00,00,0F,112
3130 DATA 00,FF,00,00,00,00,00,00,FF
```

Source code for use with an assemler

```
        ; CPC 6128 Keyboard organ
        ; By Cy Noble
        ;
        ;
        ; Assembly listing for Maxam assembler
        ;
        org     &9800       ; change if required
        write"organ.bin"    ; assembled code to disc
        nolist
        ld      a,1
        call    mode        ; change to mode 1
        call    choice      ; preset envelopes ?
        jr      nz,nonvp    ; skip to no envelopes if not
        call    presnv      ; set up envelopes
.nonvp  ld      a,12        ; clear
        call    print       ; screen
        call    info        ; show information screen
        ld      a,3
        call    seloct      ; select octave 3 default
        ld      a,0
        ld      (key1),a    ; initialise
        ld      (key2),a    ; key
        ld      (key3),a    ; bytes
        call    selton      ; select 0 tone envelope default
        ld      a,0
        call    selanv      ; ditto amplitude envelope
        call    organ       ; call main program
        call    flushq      ; system sound reset
        ld      a,12        ; clear
        call    print       ; screen
        ret                 ; and finish

.presnv ld      a,1         ; envelope 1
        ld      hl,tonsto   ; get address of envelope date store
.prlp   push    af          ; save envelope number
        push    hl          ; and address
        call    tonenv      ; system call to set up envelope
        pop     hl          ; get address back
        ld      a,7         ; adjust it
        add     l           ; to next
        ld      l,a         ; envelope data group
        jr      nc,presl2
        inc     h
.presl2 pop     af          ; envelope number
        add     1           ; to next number
        cp      6           ; not nore than 5 envelopes defined
        jr      nz,prlp     ; do another if < 6
        sub     5           ; reset envelope number to 1
.prlp2  push    af          ; and do the same
        push    hl          ; as above
        call    ampenv      ; for amplitude envelopes
        pop     hl
        ld      a,10
        add     l
        ld      l,a
        jr      nc,presl3
        inc     h
.presl3 pop     af
        add     1
        cp      6
        jr      nz,prlp2
        call    adjam1      ; set initial amplitude on
        ret                 ; all channels and return


; *** TEST FOR INDIVIDUAL KEY PRESSES ***
; NB Other Amstrads may need other key numbers
.organ  ld      ix,key1
        ld      a,66        ; escape key
        call    teskey
        ret     nz          ; exit from prog if escape hit

        ld      a,32        ; key 0
        call    teskey      ; check if pressed
        call    nz,oct0     ; if pressed set octave/env/ 0
        ld      a,64        ; key 1
        call    teskey      ; test all relevant keys in
        call    nz,oct1     ; turn and call associated routines

        ld      a,65
        call    teskey
        call    nz,oct2     ; key 2
        call    nz,oct3     ; key 3

        ld      a,56
        call    teskey
        call    nz,oct4     ; key 4

        ld      a,49
        call    teskey
        call    nz,oct5     ; key 5

        ld      a,48
        call    teskey
        call    nz,sel6     ; key 6
        ld      a,41
        call    teskey
        call    nz,sel7     ; key 7

        ld      a,40
        call    teskey
        call    nz,sel8     ; key 8

        ld      a,33
        call    teskey
        call    nz,sel9     ; key 9

        ld      a,70        ; if keys are pressed then call routine
        call    teskey      ; to get tone value into hl
        call    nz,ng0      ; CAP LOCK key = g

        ld      a,67
        call    teskey
        call    nz,ng0p     ; q key = g#

        ld      a,69
        call    teskey
        call    nz,na0      ; a key = a

        ld      a,59
        call    teskey
        call    nz,na0p     ; w key = a#

        ld      a,60
        call    teskey
        call    nz,nb0      ; s key = b

        ld      a,61
        call    teskey
        call    nz,nc1      ; d key = middle c

        ld      a,50
        call    teskey
        call    nz,nc1p     ; r key = c#

        ld      a,53
        call    teskey
        call    nz,nd1      ; f key = d

        ld      a,51
        call    teskey
        call    nz,nd1p     ; t key = d#

        ld      a,52
        call    teskey
        call    nz,ne1      ; g key = e

        ld      a,44
        call    teskey
        call    nz,nf1      ; h key = f

        ld      a,42
        call    teskey
        call    nz,nf1p     ; u key = f#

        ld      a,45
        call    teskey
        call    nz,ng1      ; j key = g

        ld      a,35
        call    teskey
        call    nz,ng1p     ; i key = g#

        ld      a,37
        call    teskey
        call    nz,na1      ; k key = a

        ld      a,34
        call    teskey
        call    nz,na1p     ; o key = a#
```

Learning CAN be fun



- **Use your Amstrad to teach and amuse your children at the same time.**
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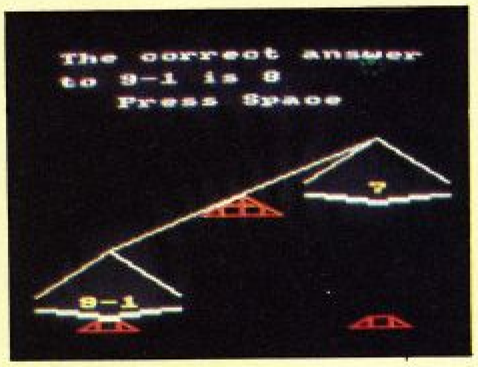
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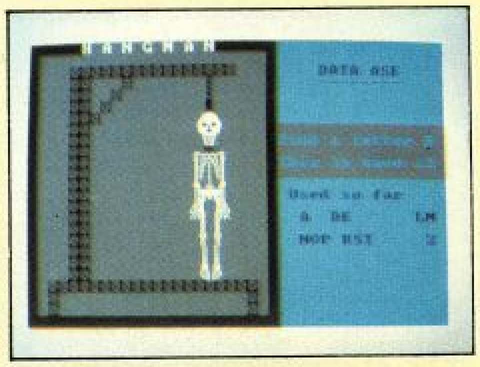
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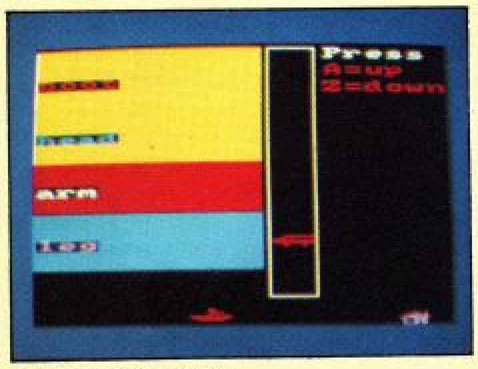
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ACUF3

```
        ld      a,36
        call    teskey
        call    nz,nb1          ; l key = b

        ld      a,29
        call    teskey
        call    nz,nc2          ; / key = c

        ld      a,26
        call    teskey
        call    nz,nc2p         ; @ key = c#

        ld      a,28
        call    teskey
        call    nz,nd2          ; + key = d

        ld      a,17
        call    teskey
        call    nz,nd2p         ; [ key = d#

        ld      a,19
        call    teskey
        call    nz,ne2          ; ] key = e


        ld      a,18
        call    teskey
        call    nz,nf2          ; RET key = f

        ld      a,2Ø
        call    teskey
        call    nz,nf2p         ; f4 key = f#

        ld      a,13
        call    teskey
        call    nz,ng2          ; f1 key = g

        ld      a,12
        call    teskey
        call    nz,ng2p         ; f5 key = g#

        ld      a,14
        call    teskey
        call    nz,na2          ; f2 key = a

        ld      a,4
        call    teskey
        call    nz,na2p         ; f6 key = a#

        ld      a,5
        call    teskey
        call    nz,nb2          ; f3 key = d
;
.chkey1 ld      a,(key1)        ; if key is in use then (key-N) will
        or      a               ; contain the system key number
        jr      z,chkey2        ; if empty try next key
        res     7,a             ; (after playing the note bit 7 is set so
        call    teskey          ; reset and check if STILL being pressed
        jr      nz,chkey2
        call    flush           ; if not then flush sound buffers )
        jr      enloop

.chkey2 ld      a,(key2)        ; As for check key 1
        or      a
        jr      z,chkey3
        res     7,a
        call    teskey
        jr      nz,chkey3
        call    flush
        jr      enloop

.chkey3 ld      a,(key3)        ; As above
        or      a
        jr      z,enloop
        res     7,a
        call    teskey
        call    z,flush

.enloop jp      organ           ; End of main loop

; ******** SUB ROUTINES *********

; Assign keys and get tone values

.ngØ    ld      a,7Ø            ; ngØ=note "G" in octave Ø
        call    keys            ; ngØp=note "G#".
        ld      hl,(gØ)         ; ie the "p" signifies a sharp note
        jp      doctav          ; and the number is the octave
.ngØp   ld      a,67            ; so here is where we pick up the
        call    keys            ; tone value from the data table and
        ld      hl,(gØp)        ; put in hl register for "doctav"
        jp      doctav          ; We only get to this group of routines
.naØ    ld      a,69            ; after a key press so first call keys
        call    keys            ; to check how many keys are in use as
        ld      hl,(aØ)         ; there are only 3 sound channels
        jp      doctav          ; (see "keys" routine later)
.naØp   ld      a,59
        call    keys
        ld      hl,(aØp)
        jp      doctav
.nbØ    ld      a,6Ø
        call    keys
        ld      hl,(bØ)
        jp      doctav
.nc1    ld      a,61
        call    keys
        ld      hl,(c1)
        jp      doctav
.nc1p   ld      a,5Ø
        call    keys
        ld      hl,(c1p)
        jp      doctav
.nd1    ld      a,53
        call    keys
        ld      hl,(d1)
        jp      doctav
.nd1p   ld      a,51
        call    keys
        ld      hl,(d1p)
        jp      doctav
.ne1    ld      a,52
        call    keys
        ld      hl,(e1)
        jp      doctav
.nf1    ld      a,44
        call    keys
        ld      hl,(f1)
        jp      doctav
.nf1p   ld      a,42
        call    keys
        ld      hl,(f1p)
        jp      doctav
.ng1    ld      a,45
        call    keys
        ld      hl,(gØ)
        srl     h               ; halve the value in hl for this octave
        rr      l
        jp      doctav
.ng1p   ld      a,35
        call    keys
        ld      hl,(gØp)
        srl     h
        rr      l
        jp      doctav
.na1    ld      a,37
        call    keys
        ld      hl,(aØ)
        srl     h
        rr      l
        jp      doctav
.na1p   ld      a,34
        call    keys
        ld      hl,(aØp)
        srl     h
        rr      l
        jp      doctav
.nb1    ld      a,36
        call    keys
        ld      hl,(bØ)
        srl     h
        rr      l
        jp      doctav
.nc2    ld      a,29
        call    keys
        ld      hl,(c1)
        srl     h
        rr      l
        jp      doctav
.nc2p   ld      a,26
        call    keys
        ld      hl,(c1p)
        srl     h
        rr      l
        jp      doctav
.nd2    ld      a,28
        call    keys
        ld      hl,(d1)
```

```
        srl     h
        rr      l
        jp      doctav
.nd2p   ld      a,17
        call    keys
        ld      hl,(d1p)
        srl     h
        rr      l
        jp      doctav
.ne2    ld      a,19
        call    keys
        ld      hl,(e1)
        srl     h
        rr      l
        jp      doctav
.nf2    ld      a,18
        call    keys
        ld      hl,(f1)
        srl     h
        rr      l
        jp      doctav
.nf2p   ld      a,20
        call    keys
        ld      hl,(f1p)
        srl     h
        rr      l
        jp      doctav
.ng2    ld      a,13
        call    keys
        ld      hl,(g0)          ; Divide by 4 for this octave
        srl     h
        rr      l
        srl     h
        rr      l
        jp      doctav
.ng2p   ld      a,12
        call    keys
        ld      hl,(g0p)
        srl     h
        rr      l
        srl     h
        rr      l
        jp      doctav
.na2    ld      a,14
        call    keys
        ld      hl,(a0)
        srl     h
        rr      l
        srl     h
        rr      l
        jp      doctav
.na2p   ld      a,4
        call    keys
        ld      hl,(a0p)
        srl     h
        rr      l
        srl     h
        rr      l
        jp      doctav
.nb2    ld      a,5
        call    keys

        ld      hl,(b0)
        srl     h
        rr      l
        srl     h
        rr      l

; *** ADJUST HL TO OCTAVE ***
.doctav ld      a,(octav)      ; get the octave value and
        or      a              ; and halve the value
        jr      z,zoct         ; in hl that number of times
        ld      b,a
.foctav srl     h
        rr      l
        djnz    foctav

; *** ASSIGN TO CHANNEL ***
.zoct   ld      a,(key1)       ; now check key storage bytes
        bit     7,a            ; if bit 7 set then note has been played and
        jr      nz,nxkey2      ; key still pressed otherwise
        or      a              ; if storage byte is not empty
        jr      nz,dochn1      ; assign it to channel 1
.nxkey2 ld      a,(key2)       ; As above
        bit     7,a
        jr      nz,nxkey3
        or      a
        jr      nz,dochn2
.nxkey3 ld      a,(key3)       ; As above
        bit     7,a
        ret     nz
        or      a
        jr      nz,dochn3
        ret                    ; return if all channels playing

; *** SOUND DATA TO CHANNEL ***
.dochn1 ld      (tone1),hl     ; Put tone value in hl into chan1 tone space
        set     7,a            ; set bit 7 to show this key and channel
        ld      (key1),a       ; are in use
        ld      hl,chan1       ; get channel 1 data address into hl
        jp      soundq         ; call system routine to play sound
.dochn2 ld      (tone2),hl     ; N.B. We put a high value into the
        set     7,a            ; duration bytes of each channel to
        ld      (key2),a       ; ensure that the note continues until
        ld      hl,chan2       ; the channel is flushed
        jp      soundq
.dochn3 ld      (tone3),hl
        set     7,a
        ld      (key3),a
        ld      hl,chan3
        jp      soundq

; *** ASSIGN KEY STORAGE ***
.keys   ld      b,a            ; Save system key number in b
        ld      a,(key1)       ; and check if key storage bytes match
        res     7,a
        cp      b              ; if so then return
        ret     z
        or      a
        jr      nz,keys2       ; skip if not empty
        ld      a,b            ; else store this key
        ld      (key1),a       ; number
        ret
.keys2  ld      a,(key2)       ; As above
        res     7,a
        cp      b
        ret     z
        or      a
        jr      nz,keys3
        ld      a,b
        ld      (key2),a
        ret
.keys3  ld      a,(key3)       ; As above
        res     7,a
        cp      b
        ret     z
        or      a
        ret     nz
        ld      a,b
        ld      (key3),a
        ret

.oct0   ld      a,0            ; Octave or Envelope number in A
        jr      octnex
.oct1   ld      a,1
        jr      octnex
.oct2   ld      a,2
        jr      octnex
.oct3   ld      a,3
        jr      octnex
.oct4   ld      a,4
        jr      octnex
.oct5   ld      a,5
        jr      octnex

.octnex bit     7,c            ; if this bit is set the CONTROL key is
        jr      nz,selton      ; also held so go select tone envelope
        bit     5,c            ; If not then check for SHIFT key
        jr      nz,selanv      ; if SHIFT go select amplitude envelope

; *** PRINT OCTAVE ***
.seloct push    af             ; save octave number on stack
        ld      hl,&0a0a       ; position cursor appropraitely
        call    setcur         ; with system call
        pop     af             ; get back octave number
        ld      (octav),a      ; and store it

.finoct add     "0"            ; convert to ASCII
        call    print          ; and print it on screen
.flush  ld      (ix+0),0       ; Reset key storage bytes
        ld      (ix+1),0
        ld      (ix+2),0       ; and flush so it has immediate effect
        jp      flushq         ; system sound reset

.sel6   ld      a,6            ; These next few are because 9 envelopes
        jr      selnex         ; are allowed but only five octaves
.sel7   ld      a,7            ; ( + 2 octaves on keyboard )
        jr      selnex
.sel8   ld      a,8
```

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```
        jr      selnex
.sel9   ld      a,9
.selnex bit     5,c           ; Check for SHIFT
        jr      nz,selanv

; *** SELECT TONE ENVELOPE ***
.selton push    af            ; Must be CONTROL so save number
        ld      hl,&110b      ; position cursor and
        call    setcur
        pop     af            ; get back A from stack
        ld      (ton1),a      ; and put it in the
        ld      (ton2),a      ; tone envelope slot of each
        ld      (ton3),a      ; channel data area
        jr      finoct        ; finoct will print it and return

; *** SELECT AMPLITUDE ENVELOPE ***
.selanv push    af            ; As for selton
        ld      hl,&130c
        call    setcur
        pop     af
        ld      (anv1),a
        ld      (anv2),a
        ld      (anv3),a
        cp      0             ; If no amp envelope then se
        push    af            ; amplitude bytes to max
        call    z,adjam1      ; in all channels
        call    nz,adjam0     ; else set them all to 0
        pop     af
        jr      finoct

.adjam0 ld      a,0           ; Adjust amplitude storage bytes
        jr      adjamp
.adjam1 ld      a,15
.adjamp ld      (amp1),a
        ld      (amp2),a
        ld      (amp2),a
        ret

; *** PRINT INFO SCREEN ***
.info   ld      hl,&0a03      ; Set up and print screen full of
        call    setcur        ; info about program
        ld      hl,noble
        ld      b,nums-noble
.noblop ld      a,(hl)
        call    print
        inc     hl
        djnz    noblop
        ld      b,atog-nums
.noblp2 ld      a,(hl)
        call    print
        inc     hl
        djnz    noblp2
        ld      c,2
.atog1  ld      hl,atog
        ld      b,7
.atog2  ld      a,(hl)
        call    print
        inc     hl
        ld      a,32
        call    print
        djnz    atog2
        dec     c
        jr      nz,atog1
        ld      hl,atog
        ld      b,2
.atog3  ld      a,(hl)
        inc     hl
        call    print
        ld      a,32
        call    print
        djnz    atog3
        ld      a,")"
        jp      print

.choice ld      hl,chooms     ; Print choice message
        ld      b,noble-chooms
.choolp ld      a,(hl)
        call    print
        inc     hl
        djnz    choolp
.cholp2 call    waitky
        cp      "Z"
        jr      c,capok
        xor     32            ; convert to upper case
.capok  cp      "Y"
        jr      z,yes
        cp      "N"
        jr      nz,cholp2     ; force "Y" or "N"
.yes    cp      "Y"
        ret

; **************** LABELS & VARIABLES *****************

.g0     defw    2551          ; ***** SCALE OCTAVE -4 *****
.g0p    defw    2408
.a0     defw    2273
.a0p    defw    2145
.b0     defw    2025
.c1     defw    1911          ; ***** OCTAVE -3 *****
.c1p    defw    1804
.d1     defw    1703
.d1p    defw    1607
.e1     defw    1517
.f1     defw    1432
.f1p    defw    1351

.chooms defm    12,31,10,10,"PRESET ENVELOPES ? ",24,"(Y/N)",24
.noble  defm    "The Noble Organ",31,1,10
.octms  defm    "Octave ",13,10
.tonms  defm    "Tone envelope",13,10
.anvms  defm    "Volume envelope",13,10,10
.nums   defm    "Numbers 0 to 5 change Octave",13,10
        defm    "CONTROL + 0 to 9 change Tone Envelope",13,10
        defm    "SHIFT + 0 to 9 change Volume Envelope",13,10
        defm    "ESC to finish",31,18,20,"KEYS",31,3,22,24
        defm    "q w   r t   u i o   @ [   4 5 6",13,10,24
        defm    "CL a s d f g h j k l ; ] R 1 2 3",13,10,10,"(g",32
.atog   defm    "abcdefg"

.tonsto defb    130,4,1,1,4,-1,1
        defb    130,4,1,2,4,-1,2
        defb    130,4,1,4,4,-1,4
        defb    2,1,20,1,10,-2,1
        defb    2,1,-20,1,10,2,1

.ampsto defb    3,15,1,1,100,0,100,100,0,100
        defb    3,1,15,1,3,-1,10,100,0,100
        defb    3,15,1,1,3,-1,10,100,0,100
        defb    3,5,3,1,5,-3,1,0,0,1
        defb    3,5,3,2,5,-3,2,0,0,1

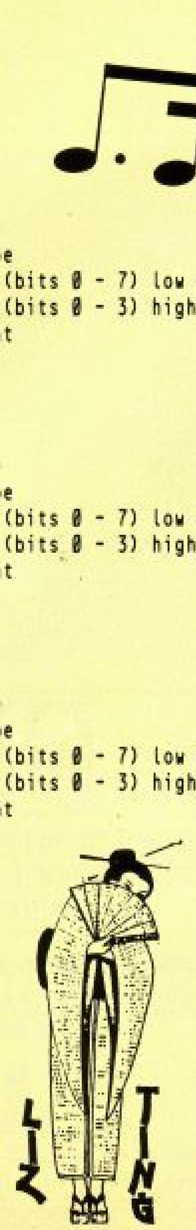
.octav  defb    0
.key1   defb    0             ; ix
.key2   defb    0             ; ix+1
.key3   defb    0             ; ix+2

.chan1  defb    1
.anv1   defb    0             ; amp envelope
.ton1   defb    0             ; tone envelope
.tone1  defb    0             ; tone period (bits 0 - 7) low val
        defb    0             ; tone period (bits 0 - 3) high val
        defb    0             ; noise content
.amp1   defb    15            ; amplitude
.dur1   defw    &ff00         ; duration

.chan2  defb    2
.anv2   defb    0             ; amp envelope
.ton2   defb    0             ; tone envelope
.tone2  defb    0             ; tone period (bits 0 - 7) low val
        defb    0             ; tone period (bits 0 - 3) high val
        defb    0             ; noise content
.amp2   defb    15            ; amplitude
.dur2   defw    &ff00         ; duration

.chan3  defb    4
.anv3   defb    0             ; amp envelope
.ton3   defb    0             ; tone envelope
.tone3  defb    0             ; tone period (bits 0 - 7) low val
        defb    0             ; tone period (bits 0 - 3) high val
        defb    0             ; noise content
.amp3   defb    15            ; amplitude
.dur3   defw    &ff00         ; duration

.mode   defl    &bc0e
.print  defl    &bb5a
.teskey defl    &bb1e
.waitky defl    &bb18
.readky defl    &bb1b
.setcur defl    &bb75
.soundq defl    &bcaa
.flushq defl    &bca7
.ampenv defl    &bcbc
.tonenv defl    &bcbf
        list
```



ACU

EXPLORER

Even the toughest starship captain has to take time off now and again. And you're heading for a long-deserved break in your one man Fribble leisure craft. It's second hand (well, tentacle), but the salesthing assured you that the little old Vogon that had owned it before had only used it to go to the abbatoir every second Sunday.

You had assured him that should the craft be in anything less than tip-top condition he himself would need a second hand to replace any parts of anatomy that might just go missing.

But it looks like you'll never be able to carry out that threat, as your inertial stabilisers cut out just above an emerald planet. Frantically battling with the controls, you manage to get a quick scan of your prospective grave before you black out.

You didn't expect to survive, but you have. Running through the computer log you find that the Fribble has survived too, but during the descent it shed nine small but important bits. The scan you took shows that these bits are scattered among some 40 billion locations. And there's nothing for it but to find them.

From your now-sessile Fribble you extract a jet pack, nine radio beacons and the direction finder to go with them, nine anti-grav drones to ferry stuff back to base, sonar, laser gun and some truly invaluable jungle boots.

All around you the jungle stands, mysterious, majestic and utterly uninviting. Nothing to frighten the warrior who, single handedly, routed Roland's Rascals, mashed the Mavericks of Marcon IV and ground the Great Galactic Grunge into grouting. Unfortunately, he's light years away. So you're frightened.

Your sonar reveals an object miles away, on a bearing of 134. It might just be a bit of Fribble, and it's as good a place as any to start. So off you trudge. On your way, you notice huge symmetric mounds looming behind the giant palm-tree like plants that make up most of the vegetative scenery.

At your destination, you're confronted with a swirling patch of colour. Cautiously you enter it. Somewhere, deep in your mind, a voice asks you for your destination. You mumble a word, and find yourself



thousands of miles away.

Not much nearer any lumps of Fribble, but it's certainly quicker than Shank's pony. Mind you, you've always got the jetpack, but that's best for taking sightings from 2000 feet. And it uses up energy like it was going out of fashion... which it is. You have to watch those ergs as they drip away.

Beacons can be dropped anywhere to help you map the place out with a bit of triangulation. It's during a fix that you become aware that the vanished civilisation which created the colourful matter transmitters also had a natty line in robotic bugs.

If you don't get to them with your laser before they get to you with their teeth (ahem) you can say goodbye to any hope of that reconstruction work you've got planned for that second-hand salesthing. And it's that which drives you forwards through the vast tracts of unmapped foliage more than anything. That Fribble dealer's got a lot coming to him . . . if you make it.

Author: Electric Dreams
Price: £8.95

Nigel

Games which offer things like 40 billion locations always strike me as playing the maths game. A bit like a car which can do 0 to 60 in four seconds but couldn't corner for toffee. They usually have 40 billion locations – all of them boring. Explorer is different, the locations need to be there to make getting from A to B that bit harder.

The graphics are good, with shades of the early Interceptor adventures. The falling towards the planet scene deserves a special mention.

5/20

Liz

This is an odd game and I don't think I like it. Some people enjoy running round forests in the name of sport, I don't.

I admire the program for it's technical brilliance and the amount of work which has obviously gone into it, but that does not mean I'd buy it.

Perhaps the Electric Dreams style of thinking games is just too much for me.

11/20

Colin

Now here's a strange beast. At first it doesn't look much, with a lot of wandering about in a Mode 1 landscape to no immediate effect.

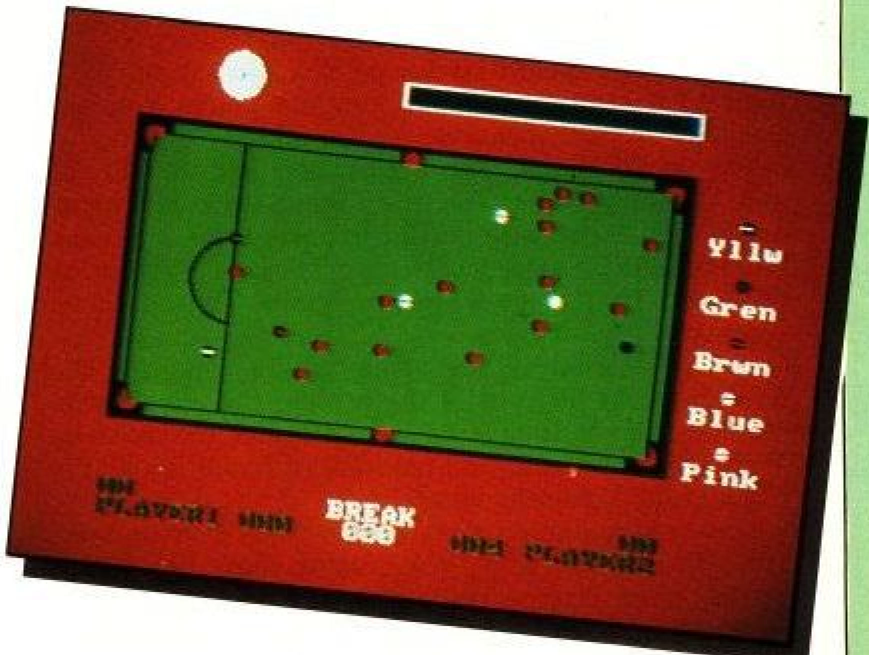
The few gimmicks incorporated into the game in an effort to make it seem like more than a hide-and-seek tend to jar (the shoot-the-bug bit being exceptionally laughable); only the DFing of beacons is any great use.

The pictures of the jungle, slow and laborious though they be, make the game worthwhile. Impressionistic, repetitious and tantalising, they fit in very well with my fantasies of exploring a mystery planet.

They might leave you stone cold, but I love 'em. How does one score a game like this?

16/20

PROFESSIONAL SNOOKER SIMULATOR



If you're missing the saturation snooker coverage on TV, perhaps you'll be interested in Pro Snooker from Codemasters. Computer snooker games tend to be judged on the way they interact with the player; things like ballistics and graphics have just about been standardised by now.

Each player has a separate key to shoot with, otherwise the controls are the same for both. The cue always points at the cue ball, and can be rotated around it in either direction at speed or with a degree of precision.

As well as the picture of the snooker table from the top (as always), there is a diagram of the player's (sorry, wrong budget label) eye view of the cue ball. This shows both the precise position where the cue tip will strike and the relative position of the ball behind the cue ball. The former, as any world class snooker player from Romford will happily tell you, is important if you want to impart any spin to the struck ball. Spin control, far from being something to do with the latest advance in washing machines, is what separates the men from the ball boys. The precise point is changed by a cunning combination of the control and the cursor keys. Most of the functions in this simulation are accessed by various Shift/Control plus a key combinations; this makes it more difficult to press the wrong thing at the wrong time.

Functions available include instant replay of the last shot, saving and loading of game to tape, practice mode and conceding the game. There's also a demo mode, where you can admire the computer's consummate skill and never play a shot yourself. A bit like playing against Steve Davis, really.

The game follows the red-colour-red sequence. As the screen is in glorious Mode 1, you might be forgiven for thinking that there aren't quite enough colours to go around. Well spotted! (snooker joke).

Mr Godwin Graham BSc has seen fit to put stripes through the balls which aren't white, red or black so as to identify them. When you've managed to down a red, you have to tell the computer which colour you're going for. Get it wrong, and your opponent gets at least four points, more if the ball you missed was blue (well, stripy black/white) or above.

In best snooker tradition, it's entirely possible for someone to win by committing fewest foul strokes. If your opponent misses, you have the opportunity to make him take the shot again.

There's a practice mode, where the balls can be shuffled at will, so you can make all those embarrassing mistakes time and time again until you get it right. Then you can move to Romford.

Author: Code Masters
Price: £1.99

Nigel

Professional Snooker Simulator, eh? Does it simulate the bank balance incrementing when you win, the shock horror exclusives in the tabloids when you lose, the drugs in the dressing room anyway?

More to the point, does it play like a real table? No, no, no and yes. It takes a bit of getting used to, but the action's OK.

Not having any joystick option is a bit off, and the keys take a bit of getting used to. I think the CDS simulation has the edge on general niceness, though.

8/20

Liz

A snooker game? How original, I have to admit that I find all snooker programs boring, preferring to nip down to my local club and wait for a real table. At least I can play Jailbreak on the arcade machine while I wait.

With Alex Higgins in the Amsoft corner and Steve Davis playing for CDS the last thing the world needs is a third contender, even if it is budget. Give it a miss.

9/20

Colin

How do you play snooker with only four colours? Simple, you use patterns to identify the values. This means that you can have a more realistic-looking screen with balls which actually look round.

But Codemasters have messed even this up by producing a tiny table. Even at budget prices this is too expensive.

15/20

SPACE HARRIER

On the checkerboard landscape of a surreal planet, a fight to the death is about to take place. You are cordially invited, of course.

The plan is simple. You fire at them and they fire at you. Who hits, wins. You are a standard model homo sapiens, equipped with one fairly nasty laser, a jetpack and the indispensable sunglasses. They are a collection of aliens. They don't wear sunglasses. They do have lasers.

In the original arcade game, where you sat on a bouncing seat in front of the screen, the aliens were dazzling: Space Invaders, with graphics designed by Walt Disney on acid and painted by Bosch under the influence of a ginseng cigarette.

One-eyed mammoths, stone faces with glowing eyes, cities floating on what looks disturbingly like half a brain, huge trioptic robots with guns the size of submarines, nightmarish trees (if you can't imagine a nightmarish tree, you haven't been in an arcade recently) and dragons.

The dragons, looking not unlike the models that wander about Soho during Chinese New Year, are part of a bonus score scheme that I still haven't figured out. Just shoot them and you'll be OK.

All of these, except the trees – you have to dodge them – fire at you with pulsating ovals of light, which would be excruciatingly beautiful if they weren't so deadly.

And on the Amstrad? It's still faster than it has any right to be. The graphics are rendered as a solid backdrop with multicoloured wireframe opponents. Everything is recognisable from the arcade version (just as well, since Elite is using coin-op pictures on the cassette insert, tut tut).

The areas through which you fly in best 2001 style have the right wierdo names – Geeza, Moot and so on and each new area is heralded by a change in tempo and style of the music.



Each landscape brings on a change of aliens and a complete new set of arboreal extravaganza to fly into while you're trying to dodge the oval-throwing nasties. And when you make high-speed contact with a tree, an oval or an alien – and you will – the wonderfully evoked curve of your crumpled body wandering earth (or wherever) wards is almost worth dying for once or twice.

Not that you'll have much choice in the matter. Cat-like, you start with nine lives. The first time you play, they last somewhat less than nine seconds.

You have to decide whether to fly high and miss the trees but hit the aliens, or fly low and vice versa. To do both, and remember to press fire at reasonable intervals, might seem impossible at first. After a while it progresses to being merely ridiculous. Whatever you do, there's always the next screen.

Author: Elite
Price: £8.95

Nigel

Playing Space Harrier without the hydraulics is a bit of a let-down, but given that the system costs thousands of pounds it's a sacrifice I'm willing to make.

The effect Elite has managed to conjure up is stunning. By using split colour palettes the planet surface looks great. I found the wire-frame aliens very difficult to see and watching someone else play is boring.

The game condenses the thrills of the arcade game into the CPC. The sprite which you control looks every bit as good as the arcade original. One of the best coin-op conversions I've seen.

19/20

Liz

Space Harrier was the first arcade game I saw which used the new Sega chip set. As a result the later games such as Enduro Racer look familiar.

The effect of these chips is stunning, huge sprites with hardware scaling and more colours than you can think of names for. The conversion to the Amstrad is a triumph.

The screen shot may not look too hot but get behind the joystick and you'll be hooked.

18/20

Colin

The word went out that Elite was doing the conversion of this game. The care-worn cynical hacks laughed out loud "Like to see that on a Spectrum", we guffawed to a man. Well, I haven't seen it on a Spectrum, but the Amstrad version seems and plays better than I'd thought possible.

Sensibly the graphics have been reduced to simple sketches and speed made paramount. The music is up to scratch, the trees are as unavoidable as ever

One gripe – the fire rate slows down dramatically when there's a lot on the screen. But for out and out monster mashing, it's a beaut.

19/20

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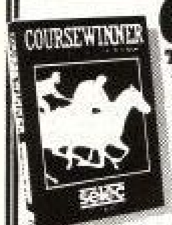
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How's that for your business efficiency?

MicroLink application form: Page 51

SCOOBY DOO



I remember running home down the hill from Mary Dean's C of E Primary School, up the hill the other side, through the churchyard and home just to watch Scooby-Doo and friends thwart another Mad Scientist in a haunted house/fairground.

The end was always the same – Fred would rip off the mask and the mad scientist would mutter "If it wasn't for those dratted kids" as the cops led him away. Then we'd have banana sandwiches . . .

So what has Elite done with Hanna-Barbera's hopeless hound? It seems to run true to form . . . The Mystery Machine arrives at the ruined castle and the gang climb out, ready to explore.

They never seem to learn that where there are ruined castles there are evildoers just about to finish off the fiendish invention that will conquer the world (or New Jersey at least).

But as they enter, Velma, Shaggy, Daphne and Fred are seized by large hands (it says here) and a chorus of voices cry out "Our experiments are almost complete. Nothing can stop us now!"

Only Scooby survives this mass kidnap. Naturally he's frightened, but in best H-B tradition decides to search for his friends. But he is not alone. As he wanders the initially deserted corridors, spooks, ghouls and goblins issue from the woodwork.

One brush with the ectoplasmic entities knocks old Scoobs for six. All he can do is punch. But where are the gang?

The adversaries are varied indeed. Ghoulfish, mad monks, springs and plain ghosts are all there. If you don't fancy battling through each level, you can choose a practice mode with just the phantoms of your picking to fight against.

But in the end, if Scooby Doo is going to free his friends, the entire gamut must be faced by the game mutt.

To add to his discomfort there are bats and bowling balls rampant. He can duck the bats, he can jump over the bowling balls, he can even run away – but in the end he has to punch a few ghoulies in the supernatural mush.

Sadly there's no digitised gruff grumblings, or those running noises that happen when Scooby hovers in mid-air before his legs get a purchase on the Gothic floor. Apart from that, it all seems nicely familiar.

Author: Elite
Price: £8.95

Nigel

Scooby Dooby Doo – Where are yooooou? I hated the cartoon: Every episode was worse than the one before.

I mean, here's this really thick, stupid canine, accompanied by even thicker, stupider humans, solving mysteries and defeating baddies – Enid Blyton, where are you now.

I usually enjoy the wander-around-and-pick-up-things sort of game, but this one reduced me to an almost catatonic state.

3/20

Liz

I once read a very valid comment about computer games – if I could remember where I'd credit the author.

Anyway the article said that no one ever complains about the lack of depth in arcade conversions but when these are compared to games originated on micros you see how shallow coin-ops are.

You'd never get something as complicated as Firebird's Elite in an arcade. Scooby Doo is simple in an arcade sense – a bit like Kung Fu Master. It's not a bad game but hardly something which will tax a brain cell.

12/20

Colin

"In their defence, m'lud, Elite can plead a brain-damaged plot and some very nice graphics".

P: "Objection! The alleged graphics consist of two very large Scooby-Doos, a Scooby-Doo head, the words Scooby Doo writ ginormous and an Elite logo. The playing area is the size of a postcard".

D: "But the animation's good".

P: "M'lud, the game is, ipso facto, unplayable".

J: "Thank you, gentlemen. I find Elite guilty of producing and foisting the worst guff ever to disgrace an Amstrad. I sentence them to life programming on Star Trek".

7/20

INFODROID



Let me take you to the streets of London la la la . . . Where every alleyway and throughfare is rendered a shooting gallery by the dreaded bikers.

Not the Hells Angels of yesteryear, but the despatch riders following the shortest route between two points without the bother of traffic laws or common sense.

Now imagine the situation in the City of the Future, where droids (robots really) traverse the 15 Great Causeways, delivering packages between the trading companies. Imagine Infodroid, courtesy of Beyond (RIP?).

Unlike the leatherclad youth on a Yamaha, most of the droids (like yours) are well behaved. They pop into a trader, pick up a parcel and drop it off at the appropriate recipient. The idea is to get as much money as possible (some things never change) by using the shortest route and carrying as much as possible at once.

The causeways are arranged as seven parallel bands. The middle band has lifts on it to the traders, service areas and junction points to other causeways. It is stationary.

Either side of it are the other bands, one set of three going up, and t'other set going down. The outermost bands travel fastest and your droid can hop between bands to facilitate the old A to B.

Sounds too easy? Well, there are gangs of rogue droids whose operators make their money by attacking and robbing peaceful, law abiding 'bots such as your good, metallic self. And they play dirty.

To help you there are various bits of hi-tech anti-piratical goodies available from your local Droiderama Service Station. These cost money, but you'll need 'em. Likewise, you'll need regular servicing and energy replenishment.

Control of your droid is by joystick alone. On the causeway, you hop about in any direction. When you're on the central band, and on a lift, a sharp pull downwards with the fire button pressed moves you into whatever bit you're over.

Once in a room, you can select the functions it offers you by rotating a cube (again with the joystick) which has eight options on each face. These include (for traders) picking up and depositing articles, checking destinations and picking exits. Service stations offer refuelling, buying and selling parts and repairs.

Things you might like to buy include shields of various strength, extra thrusters and boosters to make you go faster.

Battling the brigands is simple – don't. You cannot buy or acquire any sort of arms or zapper so you must turn and try to outrun anything that has a go at you. See why shields and boosters are such a good idea?

If you lose a droid, you have (initially) enough credit to buy a new one. If you're good, you can keep enough credit to hand to keep solvent even after a disaster. All your gadgets can be damaged; there's a status display to keep you informed of their current serviceability.

And don't forget. In between all this battling, refuelling and travelling you have to make some money or you go bankrupt. And there's not much of a market in ex-droid operators.

But that won't happen to you, will it?

Author: Beyond
Price: £8.95

Nigel

I remember Beyond: Incomprehensible icons, joystick control at all costs, lots of confusing displays and a user interface that's as intuitive as a Joyce manual in Mandarin.

If these people made nuclear power stations, I'd buy shares in geiger counters. Great idea though, just don't expect to play it without reading the instructions very carefully.

Aside from the horrendous interface, it's quite fun. The biggest bugbear is the lack of fighting ability, you have to flee asap.

Good fun, let down by gimmicky design.

15/20

Liz

I don't mind games having a plot, I don't mind the inlay card reading like The Lord of the Rings, but I do mind having to spend half an hour trying to suss out the game when this is purely frustrating.

Why can't the inlay card just say "go to a circle between two sets of letters and collect a parcel"? There, I've made the game easier for all of you.

13/20

Colin

Beyond has always been a bit quiet; Star Trek is promised to be good, and what I've seen of the ST version confirms this but Infodroid was launched with a minimum of fuss. And I can't say I'm surprised.

The graphics are very mediocre, most of the game is like a trumped up frogger and the sound is tedious. There is a certain degree of "just one more go" and the idea is clever but the icon system is too clever for its own good.

11/20

SUPER ROBIN HOOD

Robin Hood's daily grind of deer hunting, tax inspector baiting and robbing the editors to give to the freelance contributors is rudely shattered when the evil dastard, Wogan the Sheriff of Nottingham, ensnares the fair Maid Marian and locks her in the East Tower of Nottingham Castle. Sherwood Forest 0, Nottingham Forest 1.

She will only be released when Robin surrenders, or King John sends a 747 with heavy arms and a cake. Cakes are out, so it's up to that medieval macho man, Robin, to do the business.

Pausing only to snatch a quiverful of arrows from Ronnie the fletcher, Robin (I quote) "sets out through Sherwood Forest to Nottingham Castle to free his love, oblivious to the inevitable dangers that lie before him".

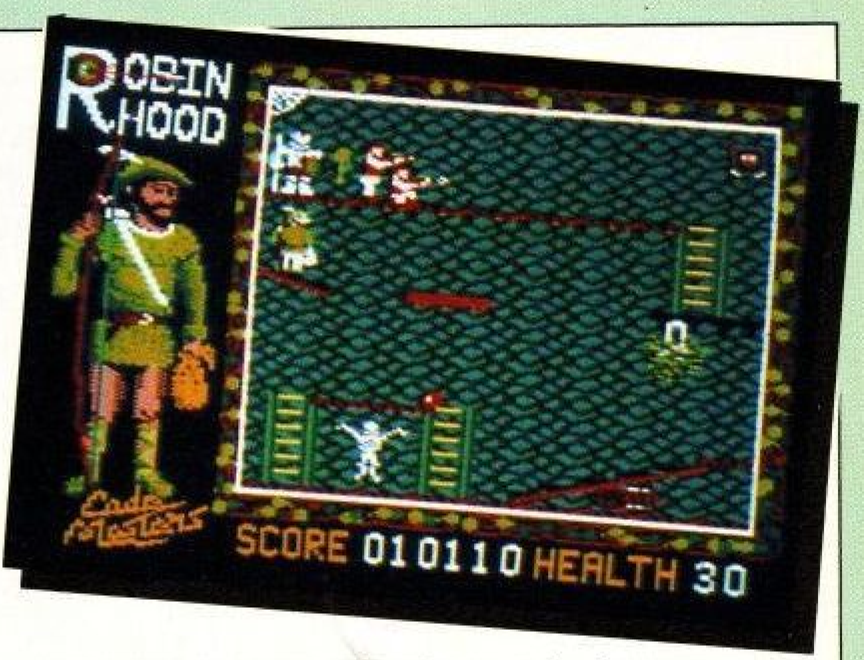
Ignoring the fact that if he really is oblivious to roomfulls of soldiers, pikestaffs and longswords he's soon going to be at a dead schloss, we can see that true love is once again running as smooth as a hedgehog on heat.

Once in the castle the fun begins. The Sheriff's fortress has a large number of interconnecting rooms, with platforms on various levels linked by ladders. Robin can scurry up and down the ladders, along the platforms and on the various mechanical lifts that are dotted about.

These only work occasionally, and Robin needs to get to the right key to start them up. Other bits of platform float through the air, vanish or spin in empty space. Still, everybody knows that Sherwood is renowned for its peculiar species of magic mushroom. Could explain the merry men . . .

In an amazing amalgam of microgame mantraps there are the fireball from Donkey Kong, the spiders from Centipede, the rats from 3D Tunnel and the infrastructure from Any Platform Game You Care To Mention (Manic Miner, for example).

Should Robby fall foul of any of these his energy supply will be depleted until at zero he becomes an ex-archer (wrong game).



And to restore his flagging fury, the Sheriff has left little pills around the place – gets more suspect by the minute.

Rumours that Sheriff Wogan is in fact Dr Christian Barnaard in drag are strengthened by the large number of hearts left decorating the fort. And they're still beating.

Robin has to collect these cardiac components before attempting to spring the maiden. There are other arrowsmiths around to do a bit of thwarting, but Green Robbo can dodge their deadly darts and prang them with his inexhaustable supply of shafts.

Little decorations abound – a skeleton in manacles here, a suit of armour there. But Robin's got no time to admire the tasteful decor – there's a female to save. Here we go, here we go, here we go . . .

Author: Code Masters
Price: £1.99

Nigel

Another fine Codemasters cassette insert. Notable for the complete absence of the adjective "Brilliant" (there is an 'Incredible', but let's forgive them that), it has a truly terrific picture of a bare-chested, blond-maned Robin with a stomachful of billiard balls dragging Maid Marian away from an ominous castle.

He's even got a sweatband (albeit in Lincon Green) and two ammo pouches on his belt. Still, there is a longbow, but he looks most uncomfortable without a carbine and grenade launcher.

The words themselves start off with WELCOME TO LEGENDARY TIMES OF ROBIN HOOD and get worse.

For a platform game, it's OK. But I've seen better.

14/20

Liz

I have to admit it I love platform games. They may be a bit passé now but I'm not fashion conscious enough to worry about that.

Robin Hood is Blaggeresque with it's moving floors. I liked the tune – even if it annoyed the rest of the office.

The speech is adequate, all together a jolly little game and one for the maze mappers.

16/20

Colin

Robin Hood, Robin Hood, riding through the glen, Robin Hood, Robin Hood with his merrie men – funny, I didn't see any of them.

Only the Sheriff of Nottingham's henchmen were around, busily trying to keep Brave Robin away from fair Marian.

But Brave Robin, undaunted by the odds, battles bravely on, firing arrows at the enemy and ducking their replies, climbing countless ladders, avoiding Giant Spiders and jumping jauntily over crawling nasties.

The animation's nice, and the falls really bone-splintering. And when you lose (as you invariably do the first 5746 times you play the game) a gutteral voice gives you a few words of comfort.

Actually I thought the voice was rather well done. Nothing spectacular, but an enjoyable game.

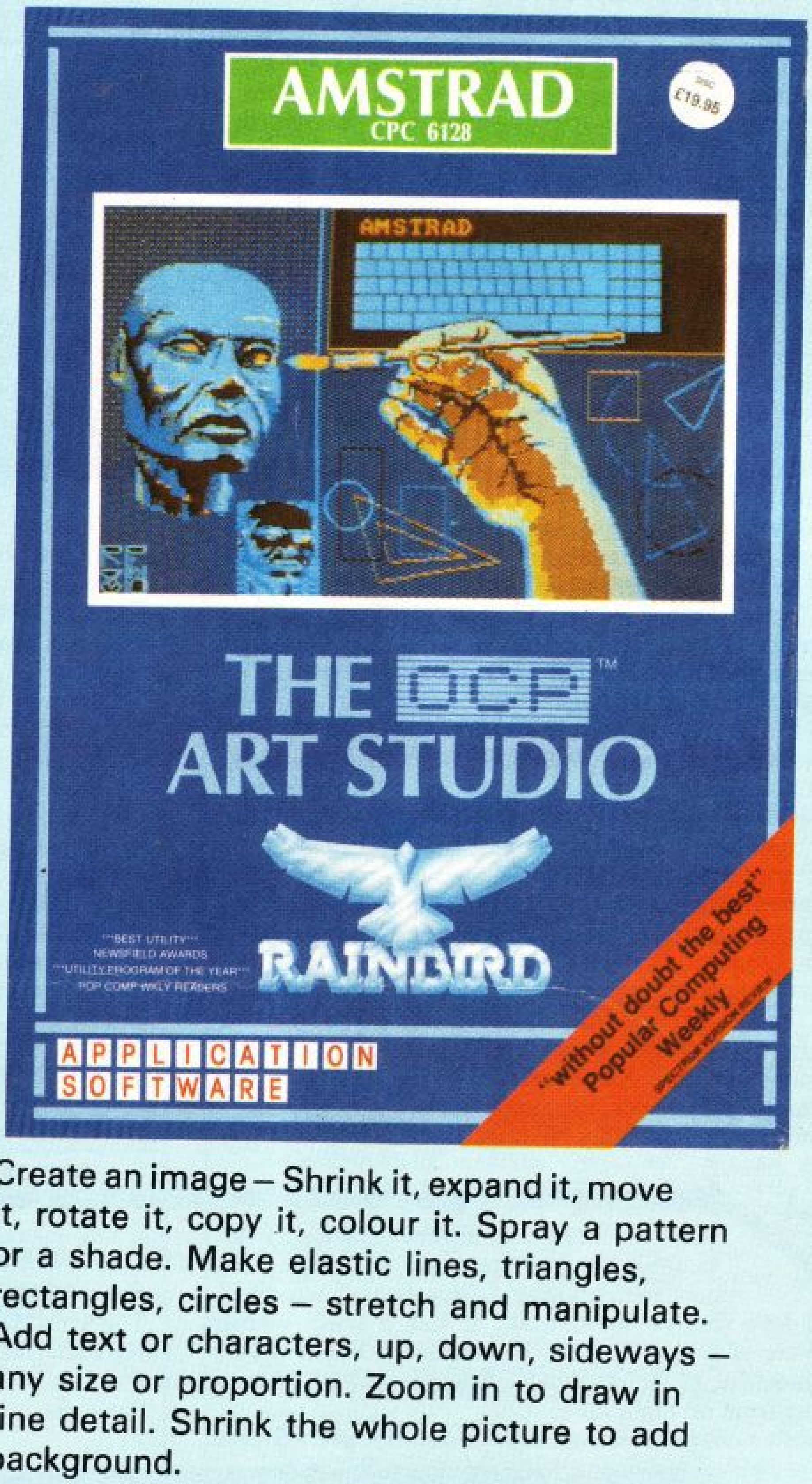
17/20

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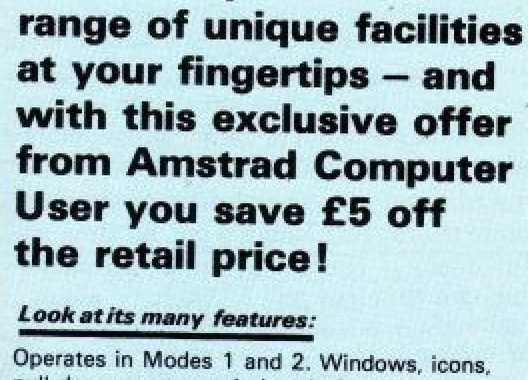


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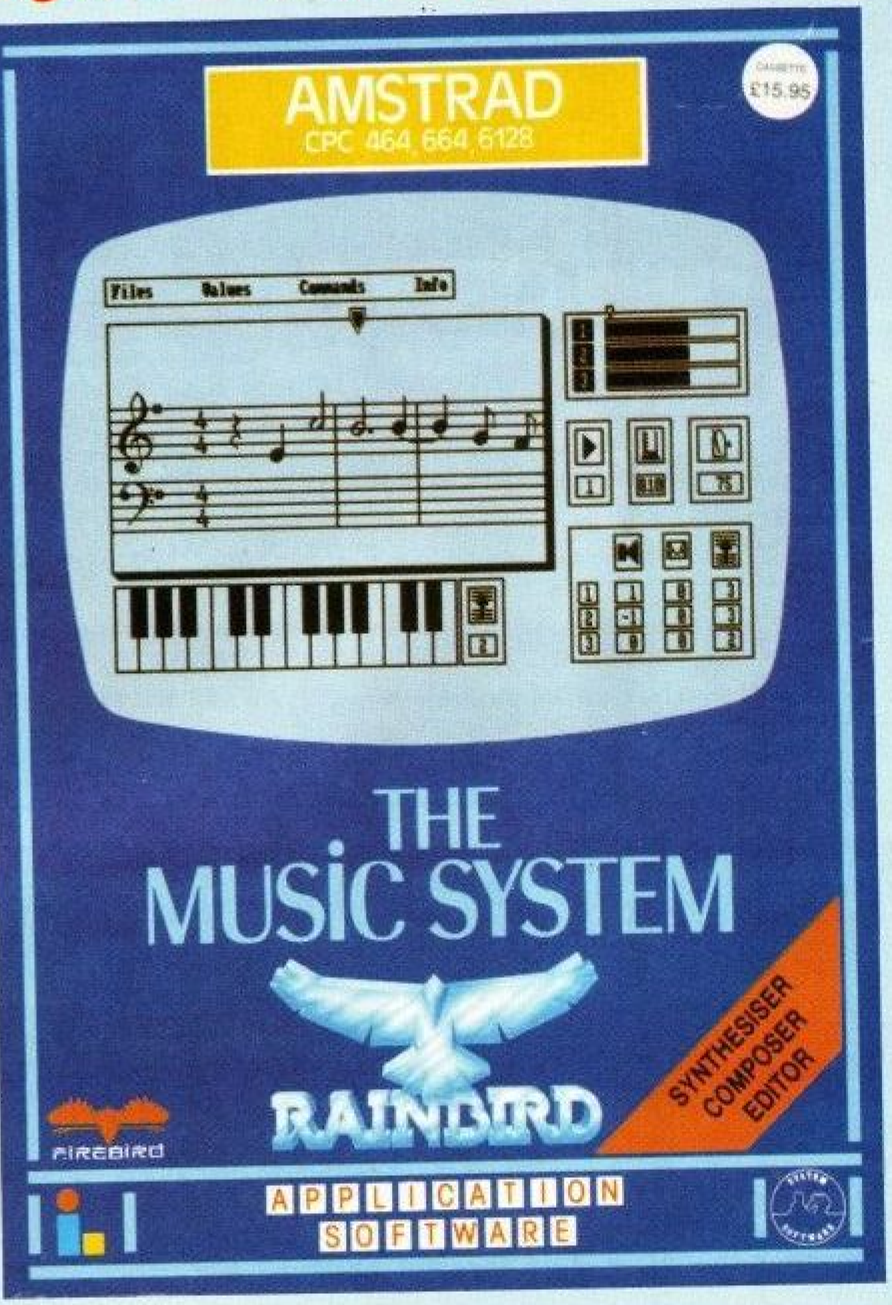
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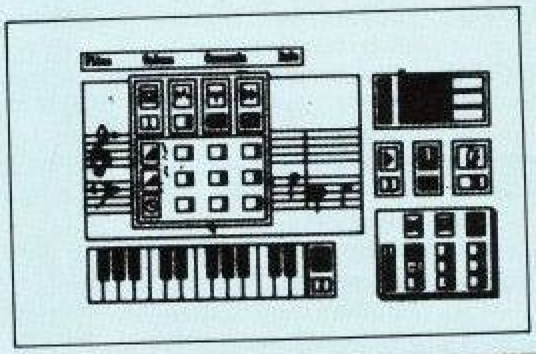


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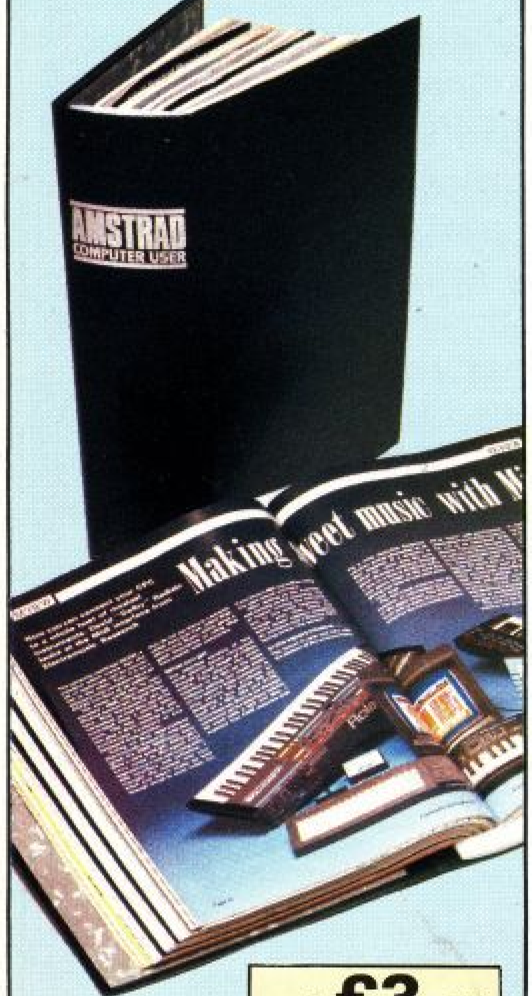
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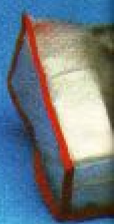
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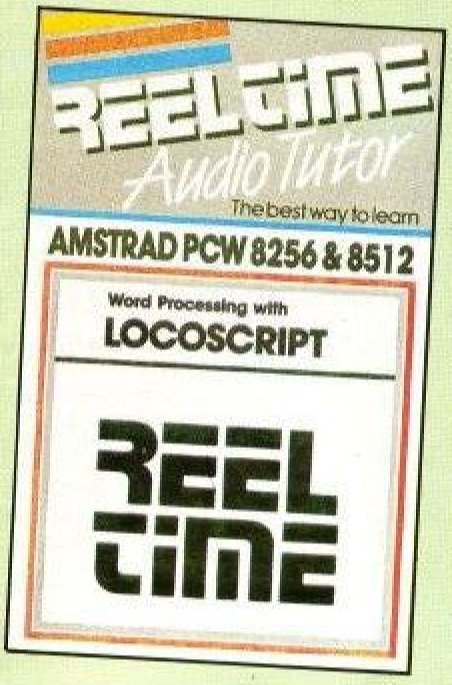
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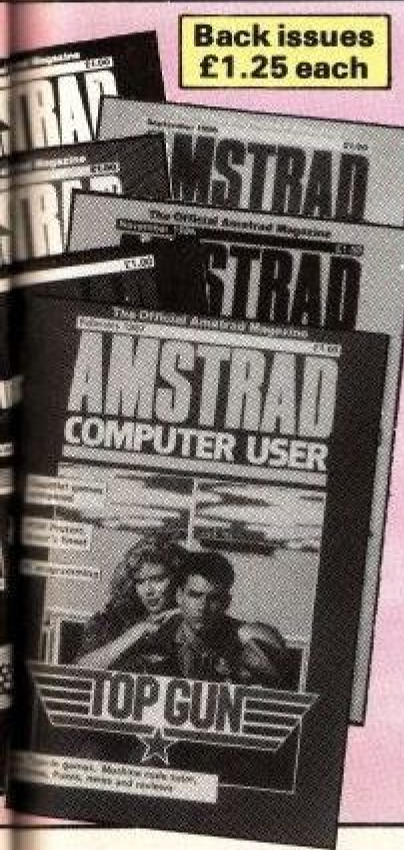


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ACU3

The Least Significant Bit

Normally a company stops talking to the press when things are going badly. Amstrad has kept up a wall of silence when things are going well for fear of the corporate words being twisted.

Since the overheated "Pink Spots" outburst Alan Sugar has kept quiet. Even the most persistent journalists have failed to get past his new secretary, Rosemary. That's a point. If the code name for the PCW was Joyce after Alan Sugar's last secretary then perhaps the next computer will be called Rosemary.

New software

The storm of Christmas releases created the lull of January software starvation. Now that has passed new titles are starting to emerge from the ACU post-room. Games to look out for in the near future include Starglider for the PCW computers. Rainbird claim it is the best eight bit version of the game. It was programmed by Realtime from the ST original by Jeremy San.

LSB had a sneak preview which confirmed that it is indeed an amazing feat of programming. With PC Starglider also waiting in the wings, the entire Amstrad range should soon have battlefields upon which you can fend off Hermann Krudd.

Alligata has similar designs on the PCW. Two of the classic CPC games, Guardian and Blagger, are being put on one disc to delight Joyce bashers. Guardian is a version of Defender, the Williams arcade game. Blagger is a ladders and platforms game. Offering these to PCW owners, many of whom have not played computer games before, demonstrates what computers are really about. Who cares about Loco-Script when you've REAL problems, such as losing your planet on the eighth attack wave with a flock of baiters on your tail.

PC avoids the rain

Reports from the US indicate that the launch of the PC went off very well with lots of interest in the 1512's 16 colour graphics mode. The start was a bit shakey. Malcom Miller, Amstrad's sales and marketing director, was stricken down with pneumonia and had to miss the trip. Despite the recent appointment of Thomas "Elizabethan Biker" Power as Malcom's right hand man, Amstrad launched in Las Vegas with a reduced staff, Thomas staying in Brentwood.

Located in the middle of a desert, Las Vegas is a hot place and not too suited to rain. As a result when the clouds opened the day before the show roads were flooded, roofs leaked and they considered shutting the airport. All for a little rain.

Amstrad were lucky that the PCs had not been set up on the exhibition stand and the rain which leaked through the ceiling didn't do any damage.

Everything comes to those who wait

Due to unusual circumstances, we have more than a vague idea of what is going into ACU for April. The Hairy Hacker promises more Pokes than ever before, including some up-to-the minute games. DIY fans will be able to build the Ambug, a roving robot which plugs into the back of your CPC.

The US software house MicroProse has landed in the sleepy village of Tetbury and our local reporter Iolo Davidson has been to see them. Keyboard pounders will enjoy our selection of type-in treats, but we haven't quite decided which ones to use so you'll just have to wait and see.

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